Zebra® 105*SL*™
Industrial/Commercial Printer

User Guide

Customer Order # 11342L

Manufacturer Part # 11342LB Rev. 8

DECLARATION OF CONFORMITY

I have determined that the Zebra printer identified as the

105*SL*™

manufactured by:

Zebra Technologies
333 Corporate Woods Parkway
Vernon Hills, Illinoi

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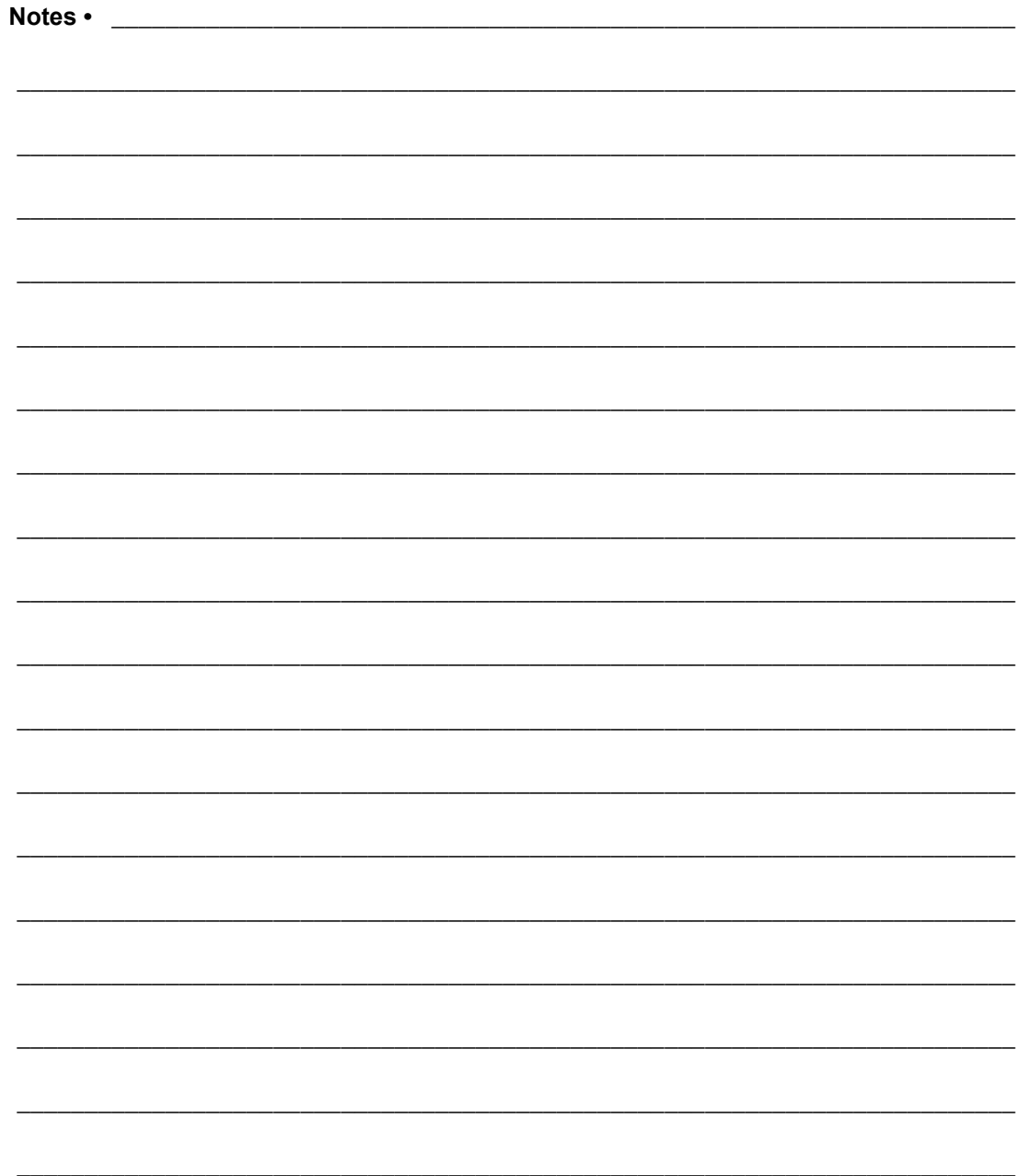
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Contents

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Product Improvements

Continuous improvement of products is a policy of Zebra Technologies. All specifications and designs are subject to change without notice.

FCC Compliance Statement

This device complies with Part 15 rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and

2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for Class B Digital Devices, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the product manuals, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, the user is encouraged to do one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The user is cautioned that any changes or modifications not expressly approved by Zebra Technologies could void the user's authority to operate the equipment. To ensure compliance, this printer must be used with Shielded Communication Cables.

Canadian DOC Compliance Statement

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Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

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Warranty Information

Effective December 30, 2002

All new Zebra products are warranted by the manufacturer to be free from defect in material and workmanship.

Printers and Related Hardware Products

Proof of purchase or shipment date is required to validate the warranty period. The warranty becomes void if the equipment is modified, improperly installed or used, damaged by accident or neglect, or if any parts are improperly installed or replaced by the user.

Products returned must be packaged in the original or comparable packing and shipping container. In the event equipment is not so packaged, or if shipping damage is evident, it will not be accepted for service under warranty. Surface transportation charges for return to customers in the continental United States is paid by Zebra. Otherwise, Zebra pays CPT (carriage paid to) nearest airport; customer pays customs, duties, taxes, and freight from airport to destination. If Zebra determines that the product returned for warranty service or replacement is not defective as herein defined, the customer will pay all handling and transportation costs.

Printers

All printers (excluding printheads) are warranted against defect in material or workmanship for twelve (12) months from the purchase date.

Printheads

Since printhead wear is part of normal operation, the original printhead is covered by a limited warranty as indicated below. Warranty period begins on purchase date.

Printhead	Warranty Period
Bar code label and receipt printer printheads	6 months
Plastic card printer printheads	12 months

To qualify for this warranty, the printhead must be returned to the factory or to an authorized service center. Customers are not required to purchase Genuine Zebra Supplies (media and/or ribbons) for warranty qualification.

However, if it is determined that the use of inappropriate or inferior supplies has caused any defect in the printhead for which a warranty claim is made, the user is responsible for Zebra's labor and material charges required to repair the defect. The warranty becomes void if the printhead is physically worn or damaged; also if it is determined that failure to follow the preventive maintenance schedule listed in the User Guide has caused defect in the thermal printhead for which a warranty claim is made.

Related Hardware Items

Products are warranted to be free of defects in material and workmanship from the date of purchase according to this chart:

Product	Warranty Period
Accessories	1 month
Batteries	3 months
Cables	1 month
Chargers/Power Supplies	1 year
Hardware Keys	1 year
Keyboard Display Units	6 months
Parts	3 months
Pocket Eye®	1 year
Software	1 month
ZebraNet® Print Servers	3 years

Defective product must be returned to Zebra for evaluation. In the event of notification of defect within the warranty period, Zebra will replace the defective item provided there had not been damage resulting from user abuse, modification, improper installation or use, or damage in shipping or by accident or neglect.

Supplies Products

Supplies are warranted to be free from defect in material and workmanship for a period of six (6) months for media and twelve (12) months for ribbon from the date of shipment by Zebra. This is provided the user has complied with storage guidelines, handling, and usage of the supplies in Zebra printers.

Zebra's sole obligation under these warranties is to furnish parts and labor for the repair or possible replacement of products found to be defective in material or workmanship during the warranty period. Zebra may in its discretion issue a credit for any such defective products in such amount as it deems reasonable.

Repair Services

Zebra repairs are warranted against defects in material and workmanship for 90 days from the date of repair by Zebra. This excludes printheads, which are warranted separately. This warranty does not cover normal wear and tear. This warranty becomes void if the item is modified, improperly installed or used, or damaged by accident, neglect, or abuse.

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333 Corporate Woods Parkway
Vernon Hills, IL 60061-3109 U.S.A.
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333 Corporate Woods Parkway
Vernon Hills, IL 60061

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Preface

This section provides you with contact information, document structure and organization, and additional reference documents.

Contents

Contacts

You can contact Zebra Technologies at any of the following:

Visit us at: http://www.zebra.com

Our Mailing Addresses:
Zebra Technologies Corporation
333 Corporate Woods Parkway
Vernon Hills, Illinois 60061.3109 U.S.A
Telephone: +1 847.634.6700
Fax: +1 847.913.8766

Zebra Technologies Europe Limited
Zebra House
The Valley Centre, Gordon Road
High Wycombe
Buckinghamshire HP13 6EQ, UK
Telephone: +44 (0)1494 472872
Fax: +44 (0)1494 450103

Support

You can contact Zebra support at:

Web Address: www.zebra.com/SS/service_support.htm

Important • The Web address is case-sensitive. The SS **must** be all caps.

US Phone Number +1 847.913.2259

UK/International Phone Number +44 (0) 1494 768289

Document Conventions

The following conventions are used throughout this document to convey certain information:

Alternate Color (online only) Cross-references contain hot links to other sections in this guide. If you are viewing this guide online in `.pdf` format, you can click the cross-reference (blue text) to jump directly to its location.

Command Line Examples All command line examples appear in `Courier New` font. For example, you would type the following to get to the Post-Install scripts in the `bin` directory:

```
Ztools
```

Files and Directories All file names and directories appear in `Courier New` font. For example, the `Zebra<version number>.tar` file and the `/root` directory.

Cautions, Important, Note, and Example

Electrostatic Discharge Caution • Warns you of the potential for electrostatic discharge.

Electric Shock Caution • Warns you of a potential electric shock situation.

Caution • Warns you of a situation where excessive heat could cause a burn.

Caution • Advises you that failure to take or avoid a specific action could result in physical harm to you.

Caution • Advises you that failure to take or avoid a specific action could result in physical harm to the hardware.

Important • Advises you of information that is essential to complete a task.

Note • Indicates neutral or positive information that emphasizes or supplements important points of the main text.

Example • Provides an example, often a scenario, to better clarify a section of text.

Tools • Tells you what tools you need to complete a given task.

Illustration Callouts Callouts are used when an illustration contains information that needs to be labeled and described. A table that contains the labels and descriptions follows the graphic. Figure 1 provides an example.

Figure 1 • Sample Figure with Callouts
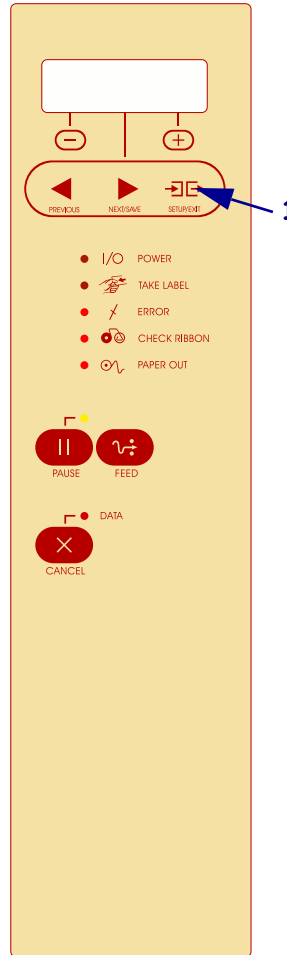
1	SETUP/EXIT button

Related Documents

The following documents might be helpful references:

- *ZPL II® Programming Guide Volume I* (part number 45541L) and *Volume II* (part number 45542L)
- *ZebraNet® Wireless Print Server User Guide* (part number 13422L)
- *ZebraNet 10/100 Print Server User and Reference Guide* (part number 47619L-001)
- *ZebraNet PrintServer II™ Installation and User Guide* (part number 45537L)
- *Maintenance Manual* (part number 32056L)

1

Introduction

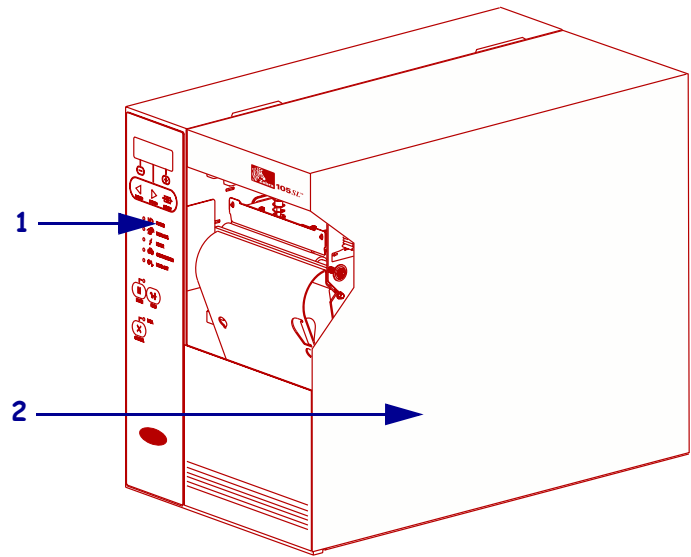This chapter provides a high-level overview of the printer and its components.

Contents

Exterior View

The following illustrations show the exterior of the printer.

Figure 1 • Printer Exterior—Front View

1	Front panel
2	Media door

Figure 2 • Printer Exterior—Rear View
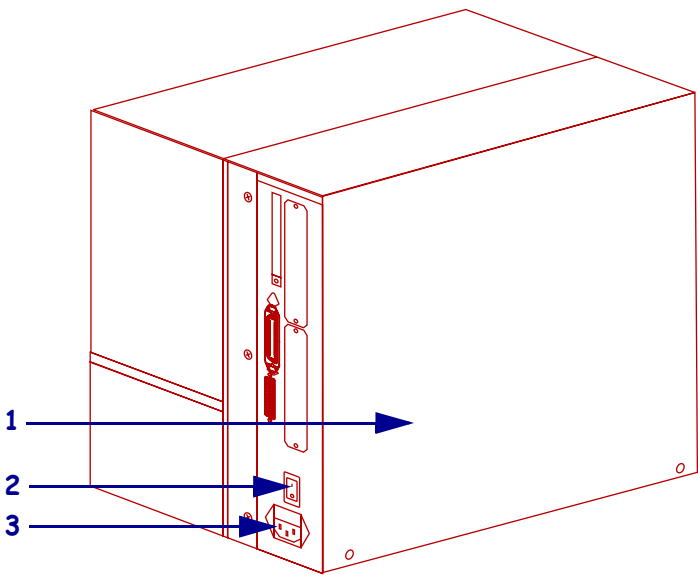
1	Electronics cover
2	Power switch
3	AC power cord connection

Operator Controls

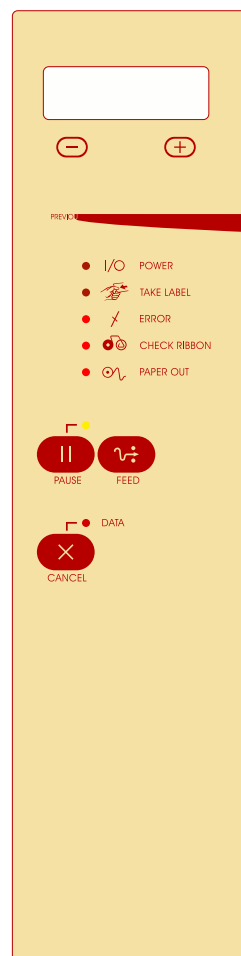This section discusses the functions of the contro
Become familiar with each of these functions bef

Power Switch

The power switch, which is located at the back o
should be turned off (**O**) before connecting or dis
influences, such as lightning storms or noise on t
erratic printer behavior. Turning the printer's pov
reestablish proper printer operation.

Front Panel Display

The front panel display (Figure 3) communicates
and parameters.

Figure 3 • Front Par

PREVIOUS

- I/O   POWER
- TAKE LABEL
- ERROR
- CHECK RIBBON
- PAPER OUT

PAUSE   FEED

DATA

CANCEL

Front Panel Keys

Table 1 • Front Panel Keys

Key	Function
II PAUSE	Starts and stops the printing process. • If the printer is not printing: no printing can occur. • If the printer is printing: printing stops once the current label is complete. Press to remove error messages from the LCD. **Note •** Pause Mode can also be activated via ZPL II (`~PP, ^PP`).
FEED	Forces the printer to feed one blank label each time the key is pressed. • Printer not printing: one blank label immediately feeds. • Printing: one blank label feeds after the current batch of labels is complete. **Note •** Equivalent to the Slew to Home Position (`~PH, ^PH`) ZPL II instruction.
DATA X CANCEL	When in Pause Mode, this key cancels print jobs. • Print job in queue: press once for each print job to be deleted. • Press and hold for several seconds to cancel all print jobs in the printer's memory. The DATA light turns off.

Note • The following keys are used when configuring the printer. Specific uses of these keys are explained in *Configuration* on page 41.

Key	Function
◀ PREVIOUS	• Scrolls back to the previous parameter. • Press *and hold* to go backward quickly through parameter sets.
▶ NEXT/SAVE	• Scrolls forward to the next parameter. (Saves any changes you have made in the configuration and calibration sequence.) • Press and hold to advance quickly through parameter sets.
⇥⇨ SETUP/EXIT	Enters and exits Setup Mode.
− +	The minus and plus keys change the parameter values. They are used in different ways depending on the parameter displayed. Common uses are: to increase/decrease a value; answer "yes" or "no;" indicate "on" or "off;" scroll through several choices; input the password; or set up the printer for a firmware download.

Front Panel Lights

Note • If two operating conditions occur simultaneously (for example, one that causes a light to be on constantly and one that causes the same light to flash), the light flashes.

Table 2: Front Panel Lights

Light	Status	Indication
POWER	Off	The printer is off or power is not applied.
	On	The printer is on.
TAKE LABEL	Off	Normal operation.
	Flashing	(Peel-Off Mode only.) The label is available. Printing is paused until the label is removed.
ERROR	Off	Normal operation—no printer errors.
	Flashing	A printer error exists. Check the LCD for more information.
CHECK RIBBON	Off	Normal operation—ribbon (if used) is properly loaded.
	On	Printing is paused, the LCD displays a warning message, and the PAUSE light is on. • If the printer is in Direct Thermal Mode: ribbon is loaded. • If the printer is in Thermal Transfer Mode: no ribbon is loaded.
PAPER OUT	Off	Normal operation—media is properly loaded.
	On	No media is under the media sensor. Printing is paused, the LCD shows an error message, and the PAUSE light is on.
PAUSE	Off	Normal operation.
	On	The printer has stopped all printing operations. Either PAUSE was pressed, a pause command was included in the label format, the online verifier detected an error, or a printer error was detected. Refer to the LCD for more information.
DATA	Off	Normal operation. No data being received or processed.
	On	Data processing or printing is taking place. No data is being received.
	Flashing	The printer is receiving data from *or* sending status information to the host computer. Flashing slows when the printer cannot accept more data, but returns to normal once data is again being received.

Printer Interior

Figure 4 shows the basic interior components of your printer. Depending on the installed options, your printer may look slightly different.

Figure 4 • Printer Components

Ribbon Take-up
Spindl

Spindle
Hook

Printhead
Lever

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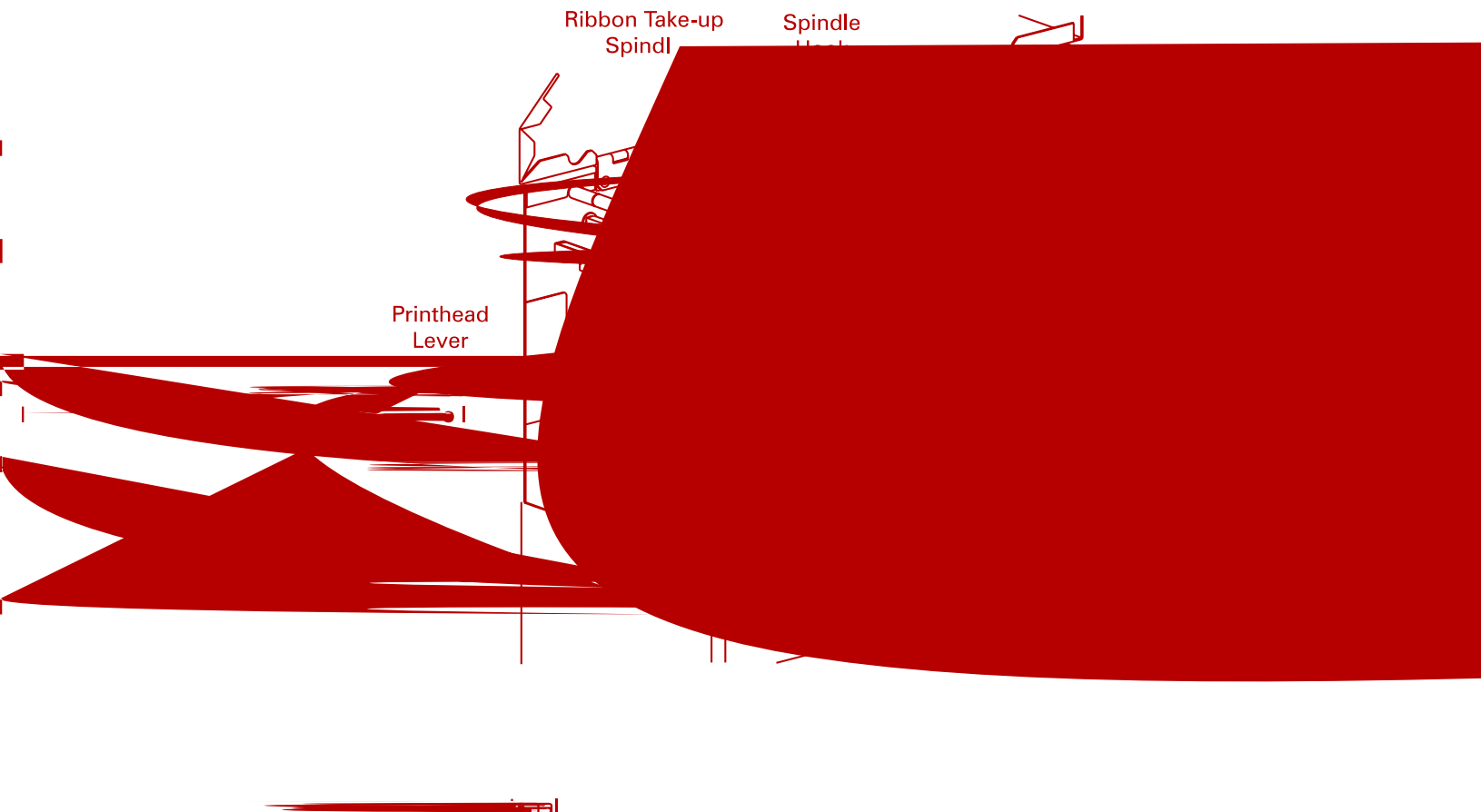
Printer Setup

The chapter provides the tasks that you must complete and the issues that you must consider before you load and configure your printer.

Contents

Before You Begin

Review this checklist, and resolve any issues before you begin setting up your printer. When you are ready, continue with *Configuration* on page 41.

❑ **Unpack and Inspect** Have you unpacked the printer and inspected it for damage? If you have not, see *Unpack and Inspect the Printer* on page 9.

❑ **Select a Site** Have you selected an appropriate location for the printer? If you have not, see *Select a Site for the Printer* on page 10.

❑ **Attach Power Cord** Do you have the correct power cord for your printer? If you are unsure, see *Power Cord Specifications* on page 11. To attach the power cord and connect the printer to a power source, see *Connect the Printer to a Power Source* on page 11.

❑ **Connect to a Data Source** Have you determined how the printer will be connected to a data source (usually a computer)? For more information, see *Select a Communication Interface* on page 13.

❑ **Select Media** Do you have the correct media for your application? If you are unsure, see *Types of Media* on page 16.

❑ **Select Ribbon** Do you need to use ribbon, and is the appropriate ribbon available, if needed? If you are unsure, see *Ribbon* on page 18.

Unpack and Inspect the Printer

- Check all exterior surfaces.
- Raise the media door, and inspect the media compartment.
- Save the carton and all packing material in case the printer needs to be shipped. Contact your authorized Zebra reseller for instructions.
- Depending on how your printer was ordered, a power cord may or may not be included. If one is not included, or if the one included is not suitable for your requirements, see *Connect the Printer to a Power Source* on page 11.

⚠ **Electric Shock Caution •** For personnel and equipment safety, always use an approved three-conductor power cord specific to the region or country intended for installation. This cord must use an IEC 320 female connector and the appropriate region-specific, three-conductor grounded plug configuration.

Report Damage

If you discover shipping damage:

- Immediately notify the shipping company and file a damage report.

Important • Zebra Technologies Corporation is not responsible for any damage incurred during the shipment of the equipment and will not repair this damage under warranty

- Keep the carton and all packing material for inspection.
- Notify your local Zebra reseller.

Storage

If you are not placing the printer into operation immediately, repackage it using the original packing materials. The printer may be stored under the following conditions:

- Temperature: –40°F to 140°F (–40°C to 60°C)
- Relative humidity: 5% to 85%, non-condensing

Select a Site for the Printer

Consider the following when selecting an appropriate location for your printer.

Select a Surface

Select a solid, level surface of sufficient size and strength to accommodate the printer and other equipment (such as a computer), if necessary. The choices include a table, countertop, desk, or cart.

Provide Proper Operating Conditions

Because the printer was designed and is fabricated as an industrial-type unit, it functions satisfactorily in a location that conforms to specified environmental and electrical conditions, including a warehouse or factory floor. For more information on the required conditions, see *General Specifications* on page 93.

Table 3 shows the temperature and relative humidity requirements for the printer when it is operating.

Table 3 • Operating Temperature and Humidity

Mode	Temperature	Relative Humidity
Thermal Transfer	41° to 104°F (5° to 40°C)	20 to 85% non-condensing
Direct Thermal	32° to 104°F (0° to 40°C)	20 to 85% non-condensing

Allow Proper Space

The printer should have enough space around it for you to be able to open the media door. To allow for proper ventilation and cooling, leave open space on all sides of the printer.

Caution • Do not place any padding or cushioning material behind or under the printer because this restricts air flow and could cause the printer to overheat.

Provide a Data Source

If the printer will be located away from the data source, the selected site must provide the appropriate connections to that data source. For more information on the types of communication interfaces, see *Select a Communication Interface* on page 13.

Connect the Printer to a Power Source

⚠️ **Electric Shock Caution •** For personnel and equipment safety, always use an approved three-conductor power cord specific to the region or country intended for installation. This cord must use an IEC 320 female connector and the appropriate region-specific three-conductor grounded plug configuration.

To connect the printer to a power source, complete these steps:

1. Turn the printer power switch (located on the rear of the printer) to the Off (**O**) position.

2. Plug the power cord into the mating connector on the rear of the printer.

3. Plug the other end of the power cord into the power source.

Power Cord Specifications

Depending on how your printer was ordered, a power cord may or may not be included. The power cord used must meet your local electrical requirements. If a power cord is not included or if the one included is not suitable for your requirements, refer to the following guidelines.

Your power cord must meed these standards:

• The overall length must be less than 9.8 ft. (3.0 m).

• It must be rated for at least 5A, 250 VAC.

• The chassis ground (earth) **must** be connected to ensure safety and reduce electromagnetic interference. The ground connection is handled by the third wire (earth) in the power cord as shown in Figure 5.

Figure 5 • Power Cord Specifications
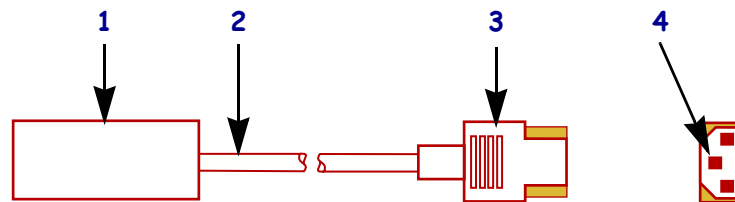
1	AC power plug for your country
2	3-conductor HAR cable
3	IEC 320 connector
4	Neutral earth live in contact view

- The AC power plug and IEC 320 connector must bear the certification mark of at least one of the known international safety organizations shown in Figure 6.

Figure 6 • International Safety Organization Marks
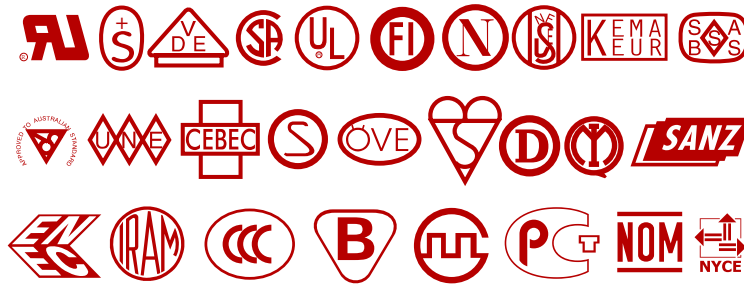
Select a Communication Interface

The way that you connect your printer to a data source depends on the communication options installed in the printer.

Optional Print Servers:

- ZebraNet Wireless Print Server. This option is available for 105*SL* printers with serial number greater than 6400356. For more information on this option, see the *ZebraNet Wireless Print Server User Guide* (Zebra part number 13422L-001).

- ZebraNet 10/100 Print Server (10/100 PS). For more information on 10/100 PS, see the *ZebraNet 10/100 Print Server User and Reference Guide* (Zebra part number 47619L-001).

- ZebraNet PrintServer II (PSII). For more information on PSII, see the *PrintServer II User and Reference Guide* (Zebra part number 45537L).

Standard interfaces: the RS-232 DB-9 serial data port and the IEEE 1284 compliant bidirectional parallel port. For further information, see *Data Ports* on page 59.

Serial Port Depending on the date of manufacture, your Zebra 105*SL* printer may be equipped with either a DB-25 serial connector or a DB-9 serial connector.

Note • If you have the DB-9 serial interface connector, RS-422 and RS-485 serial data ports are available through an adapter. Contact your Zebra distributor for details.

Communicating using a serial data port (see Figure 7 for a DB-25 serial interface connector and Figure 8 for a DB-9 serial interface connector) requires choosing the baud rate, number of data bits, stop bits, parity, and handshake (default settings are 9600 baud, 8 data bits, 1 stop bit, no parity, and XON/XOFF). Parity only applies to data transmitted by the printer since the parity of received data is ignored. See *Serial Data Port* on page 60 to configure the communication parameters. The values selected must be the same as those used by the host equipment connected to the printer.

Figure 7 • DB-25 Serial Interface

Printer   Computer

Male

25

Male

25

Female 9

Null modem adapter
(if using a standard
modem cable)

◄─────── 50 ft. (15.2 m) maximum ──────►
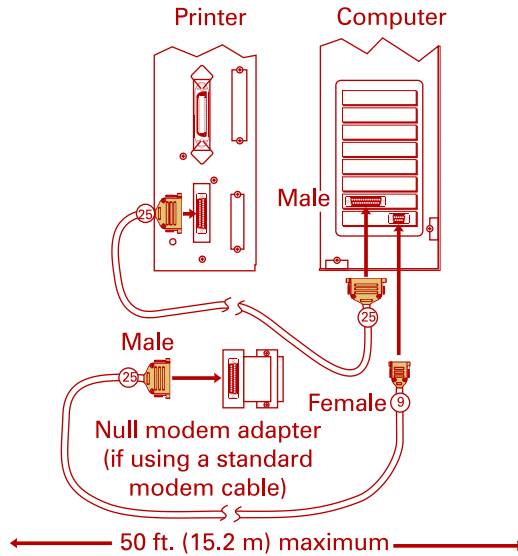
Figure 8 • DB-9 Serial Interface

Printer   Computer

Male

9

25

9

9

Null modem adaptor
(if using a standard
modem cable)

◄─────── 50 ft. (15.2 m) maximum ──────►
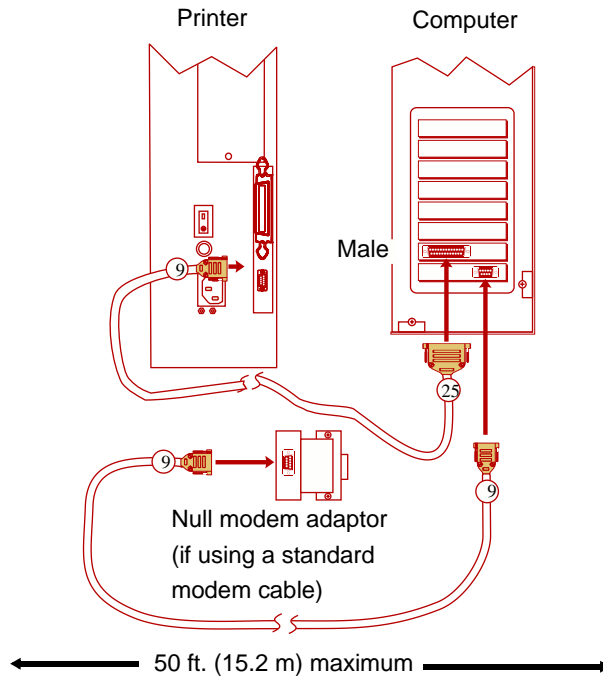
Parallel Port Communicating using the parallel port (Figure 9) does not require special settings. The serial settings do not affect the parallel port. Refer to *Parallel Data Port on page 64* for further information.

Figure 9 • Communicating Using a Parallel Port
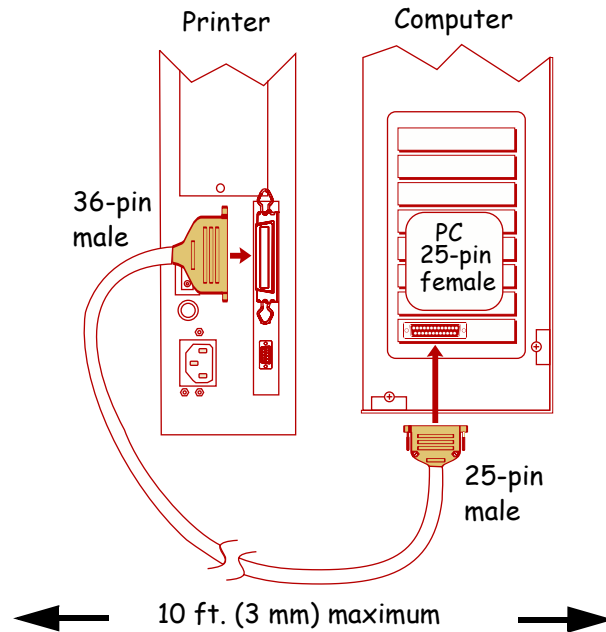
Cable Requirements

Data cables must be fully shielded and fitted with metal or metallized connector shells. Shielded cables and connectors are required to prevent radiation and reception of electrical noise.

To minimize electrical noise pickup in the cable:

- Keep data cables as short as possible.
- Do not bundle the data cables tightly with the power cords.
- Do not tie the data cables to power wire conduits.

Note • Zebra printers comply with FCC Rules and Regulations, Part 15 for Class B Equipment using fully shielded, 6.5 ft (2 m) data cables. Use of unshielded cables may increase radiation above the Class B limits.

Note • RS-422 and RS-485 applications should use twisted shielded pairs as recommended in the TIA/EIA-485 Specification.

Types of Media

Your printer is capable of using various forms of media. These include roll and fanfold media (Figure 10) that may be labels or card stock and that may have optional perforations, black marks, or registration holes. The following sections contain descriptions of the various types of media approved for use in your printer.

Figure 10 • Roll and Fanfold Media

Roll Media
(non-continuous shown)

Fanfold Media
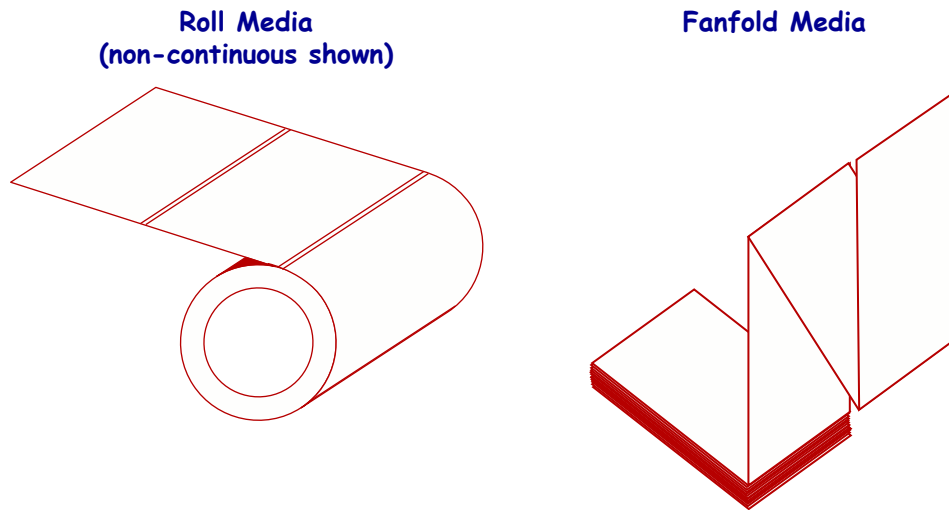
Selecting Media

We strongly recommend the use of Zebra-brand supplies for continuous high-quality printing. A wide range of paper, polypropylene, polyester, and vinyl stock has been specifically engineered to enhance the printing capabilities of the printer and to ensure against premature printhead wear.

Important • Certain printing conditions may require that you adjust printing parameters, such as print speed, darkness, or print mode. These conditions include (but are not limited to):

* printing at high speeds
* cutting or peeling the media
* the use of extremely thin, small, synthetic, or coated labels

Because print quality is affected by these and other factors, it is important that you run tests to determine the best combination of printer settings and media for your application. A poor match may limit print quality or print rate, or the printer may not function properly in the desired print mode.

Non-Continuous Media

Non-continuous web media refers to individual labels that are separated by a gap, notch, or hole (Figure 11). When you look at the media, you can tell where one label ends and the next one begins.

Figure 11 • Non-Continuous Web Media

1	Hole
2	Label Gap
3	Notch
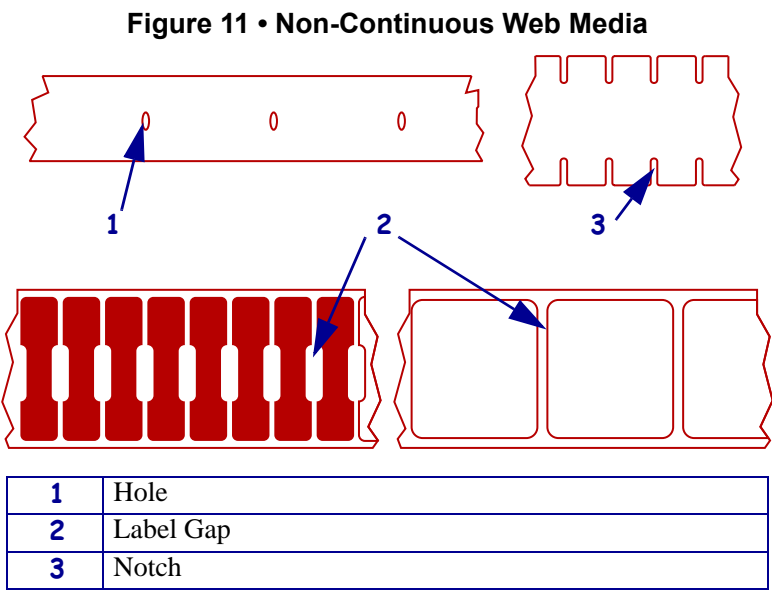
Important • When using media that has holes or notches, position the sensor directly over a hole or notch.

Non-continuous black mark media has black marks printed on the back, which indicate the start and end of each label. Figure 12 shows a sample of non-continuous black mark media.

Figure 12 • Non-Continuous Black Mark Media
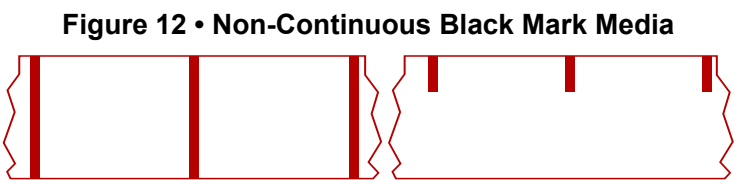
Continuous Media

Continuous media (Figure 13) is one uninterrupted roll of material without gaps, holes, notches, or black marks. This allows the image to be printed anywhere on the label. The individual labels can be cut apart or stored in a roll for later use.

Figure 13 • Continuous Media
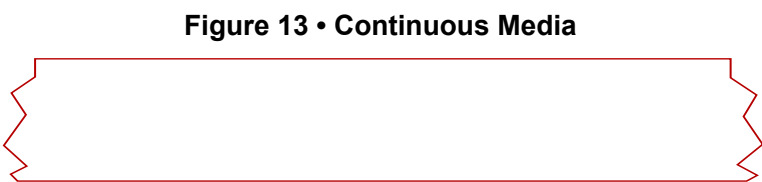
Ribbon

Ribbon is a thin film that is coated on one side with wax or wax resin, which is transferred to the media during the thermal transfer process. The media determines whether you need to use ribbon and how wide the ribbon must be.

When to Use Ribbon

Thermal transfer media requires ribbon for printing while direct thermal media does not. To determine if ribbon must be used with a particular media, perform a media scratch test.

To perform a label scratch test, complete these steps:

1. Scratch the print surface of the media with your fingernail.

2. Did a black mark appear on the media?

If a black mark...	Then...
Does not appear on the media	The media is **thermal transfer**. A ribbon is required with this type of media.
Appears on the media	The media is **direct thermal**. No ribbon is required for this type of media, though ribbon may be used to help protect the printhead from abrasion with the media.

Ribbon Width

When ribbon is used, it must be as wide as or wider than the media being used. If the ribbon is narrower than the media, areas of the printhead are unprotected and subject to premature wear.

Coated Side of Ribbon

Ribbon can be wound with the coated side on the inside or outside (see Figure 14). If you are unsure which side of a particular roll of ribbon is coated, perform an adhesive test or a ribbon scratch test to determine which side is coated.

Figure 14 • Ribbon Coated on Outside or Inside

Outside   **Inside**

Adhesive Test

If you have labels available, perform the adhesive test to determine which side of a ribbon is coated. This method works well for ribbon that is already installed.

To perform an adhesive test, complete these steps:

1. Peel a label from its backing.

2. Press a corner of the sticky side of the label to the outer surface of the roll of ribbon.

3. Peel the label off of the ribbon.

4. Observe the results. Did flakes or particles of ink from the ribbon adhere to the label?

If ink from the ribbon...	Then...
Adhered to the label	The ribbon is coated on the outer surface.
Did not adhere to the label	The ribbon is likely coated on the inner surface. a. Press a corner of the sticky side of the label to the inner surface of the roll of ribbon. b. Peel the label off of the ribbon. c. Observe the results again. The ink from the ribbon should have adhered to the label. If the ink did not stick either time, repeat the adhesive test with a stickier adhesive, or perform the ribbon scratch test.

Ribbon Scratch Test

If you do not have labels available, perform the ribbon scratch test. This method works best if the ribbon is not installed.

To perform a ribbon scratch test, complete these steps:

1. Unroll a short length of ribbon.

2. Place the unrolled section of ribbon on a piece of paper with the outer surface of the ribbon in contact with the paper.

3. Scratch the inner surface of the unrolled ribbon with your fingernail.

4. Lift the ribbon from the paper.

5. Observe the results. Did the ribbon leave a mark on the paper?

If the ribbon...	Then...
Left a mark on the paper	The ribbon is coated on the outer surface.
Did not leave a mark on the paper	The ribbon is likely coated on the inner surface. **a.** Flip the ribbon over on the paper so the inner side of the ribbon comes in contact with the paper. **b.** Scratch the outer surface of the unrolled ribbon with your fingernail. **c.** Lift the ribbon from the paper. **d.** Observe the results again. The ribbon should have left a mark on the paper. If not, repeat the test, starting with the first side again. You may need to scratch the surface of the ribbon harder.

3

Printer Operation

If you have completed the tasks and resolved the issues in the checklist in *Before You Begin on page 8*, follow the instruction in this chapter to load and calibrate your printer and to print configuration labels.

Contents

Roll Media Loading

The different print modes affect the way that media is loaded in the printer.

- **Tear-Off** mode: Labels are produced in strips.
- **Peel-Off** mode: Labels are dispensed and peeled from the liner as needed.
- **Rewind** mode: Labels are rewound internally.
- **Cutter** mode: Labels are printed and individually cut.

Note • A calibration must be performed with **all** loading modes during the following circumstances if the printer is set to Feed or No Motion at power up or head close:

- When media and ribbon (if used) are first installed in the printer.
- When media or ribbon is changed to a different type.

Tear-Off Mode

Refer to Figure 15.

To load media in Tear-Off mode, complete these steps:

1. Open the printhead.

2. Slide the media guide and media supply guide as far from the printer frame as possible.

3. Load media as shown.

4. Slide in the media guide and media supply guide so they just touch, but do not restrict, the edge of the roll.

5. Close the printhead.

Figure 15 • Tear-Off Mode Loading
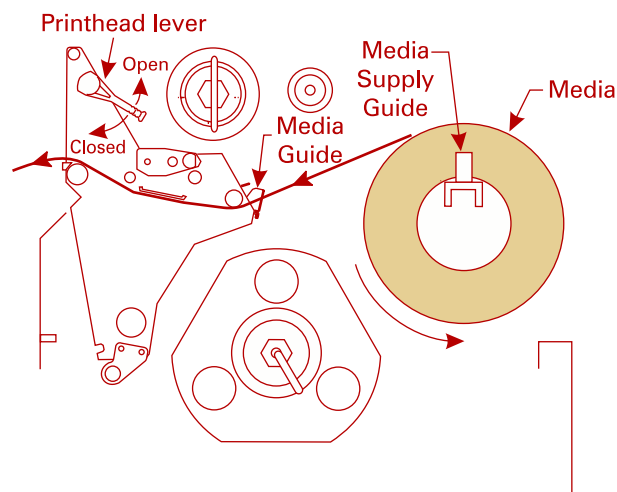
Peel-Off Mode

Refer to Figure 16. The following instructions pertain to printers with the Rewind option only.

To load media in Peel-Off mode, complete these steps:

1. Remove the rewind plate from the front of the printer (if installed). Store it upside-down on the two mounting screws on the inside of the front panel.

2. Open the printhead.

3. Slide the media guide and media supply guide as far from the printer frame as possible.

4. Load media as shown.

5. When loading media, allow approximately 36 in. (915 mm) of media to extend past the tear-off bar. Remove all labels from this portion to create a leader.

6. Remove the hook from the rewind spindle. If you are using a core, slide it onto the rewind spindle until it is flush against the guide plate.

7. Wind the label liner around either the 3 in. (76.2 mm) core *or* the rewind spindle and reinstall the hook.

8. Slide in the media guide and media supply guide so they just touch, but do not restrict, the edge of the roll.

Note • Before closing the printhead, make sure that:
- the media is positioned against the inside guides.
- the media is taut and parallel with itself and the pathway when wound onto the rewind spindle/core.

9. Close the printhead.

10. To remove the label liner from the rewind spindle, refer to *Removing the Label Liner on page 28*.

Figure 16 • Peel-Off Mode Loading
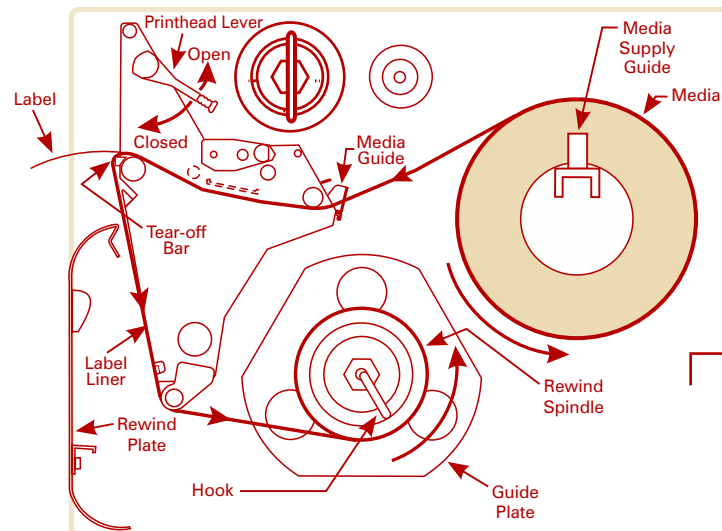
Rewind Mode

Refer to Figure 17. The following instructions pertain to printers with the Rewind option only.

To load media in Rewind mode, complete these steps:

1. Remove the rewind plate from its storage location in front of the print mechanism inside the media compartment.

2. Invert the rewind plate so that the lip on the attached hook plate points down.

3. Insert the hook plate lip a short distance (0.5 in. or 13 mm) into the lower opening in the side plate.

4. Align the upper end of the rewind plate with the corresponding opening in the side plate. Slide in the rewind plate so that it stops against the printer's main frame.

5. Open the printhead.

6. Slide the media guide and media supply guide as far from the printer frame as possible.

7. Load media as shown.

8. When loading media, allow approximately 36 in. (915 mm) of media to extend past the printhead. Remove all labels from this portion to create a leader.

9. Remove the hook from the rewind spindle. If you are using a core, slide it onto the rewind spindle until it is flush against the guide plate.

10. Wind the label liner around either the 3 in. (76.2 mm) core *or* the rewind spindle and reinstall the hook.

11. Slide in the media guide and media supply guide so they just touch, but do not restrict, the edge of the roll.

12. Close the printhead.

Note • Before closing the printhead, make sure:

- The media is positioned against the inside guides.
- The media is taut and parallel with itself and the pathway when wound onto the rewind spindle or core.

Figure 17 • Rewind Mode Loading
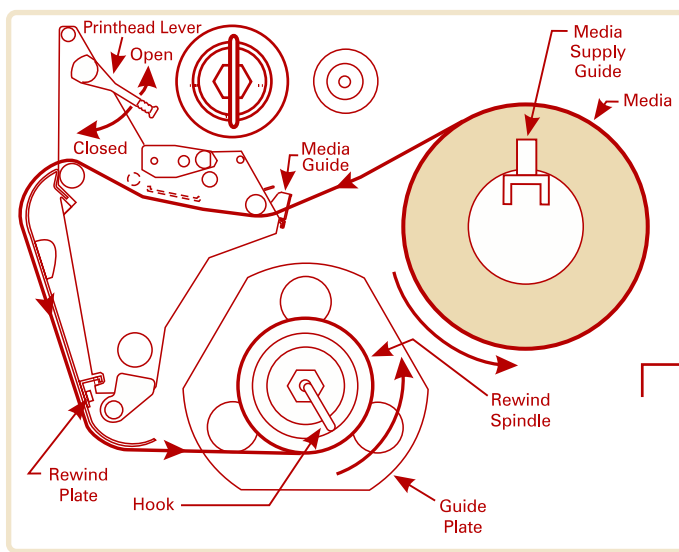
Cutter Mode

Refer to Figure 18. The following instructions pertain to printers with the cutter option only.

⚠ **Caution •** The cutter blade is sharp. Do not touch or rub the blade with your fingers.

To load media in Cutter mode, complete these steps:

1. Open the printhead.

2. Slide the media guide and media supply guide as far from the printer frame as possible.

3. Load media as shown.

4. Slide in the media guide and media supply guide so they just touch, but do not restrict, the edge of the roll.

5. Close the printhead.

6. The printer automatically feeds out and cuts one label when the printer is turned on.

Figure 18 • Cutter Mode Loading
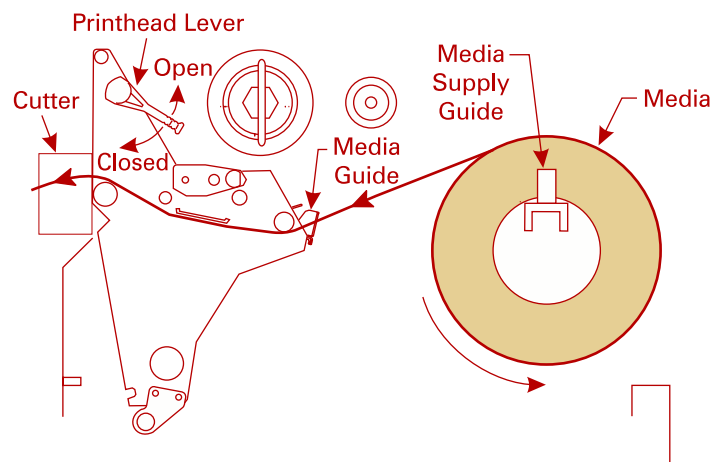
Peel-Only Mode

Refer to Figure 19. The following instructions pertain to printers with the peel option only.

To load media in Peel-Only mode (with or without Rewind option), complete these steps:

1. Press the printhead open lever. The printhead assembly springs up.

2. Slide out the media supply guide as far from the printer frame as possible.

3. Place the roll of media on the media supply hanger and orient the media properly.

4. Slide in the media supply guide so that it just touches, but does not restrict, the edge of the roll.

5. Feed the media under the inner media guide in the print mechanism.

6. Pull approximately 36 in. (915 mm) of media through the front of the printer.

7. Ensure that the media is against the inner media guide. Slide in the outer media guide so that it just touches, but does not restrict, the edge of the media.

8. Close the printhead assembly.

9. If your printer has a Peel with a Rewind option, remove the rewind plate and store it upside-down on the mounting screw on the inside of the front panel.

10. Remove the hook from the peel spindle shaft.

11. Remove several labels from the media liner and then wind the liner once or twice around the media take-up spindle.

12. Reinstall the hook on the peel spindle shaft.

Figure 19 • Peel-Only Mode Loading
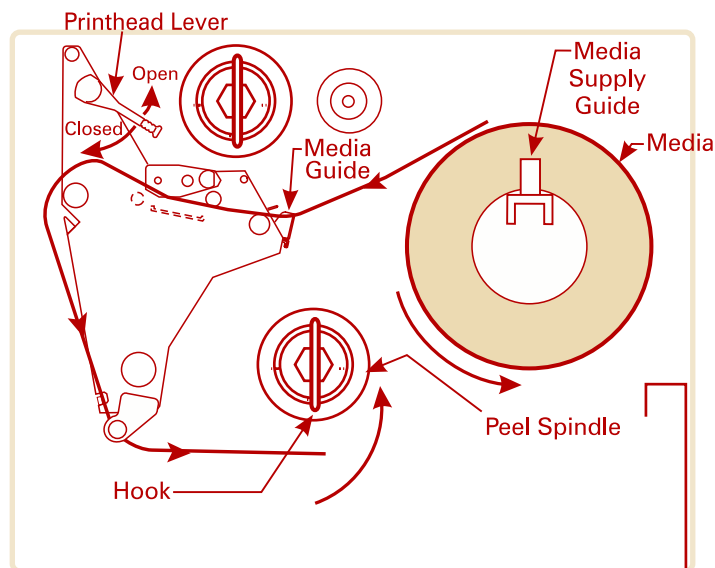
Removing the Label Liner

Because the rewind spindle holds the liner from a standard-size media roll, perform this procedure whenever you change the media. You do not need to turn off the printer to perform this procedure.

To remove the liner from the rewind spindle, follow these steps:

1. Unwind approximately 36 in. (915 mm) of liner from the rewind spindle. Cut it off at the spindle.

2. Pull out the hook. Slide the liner off of the rewind spindle and discard.

3. Wind the media around the rewind spindle once or twice and reinstall the hook. Continue winding to remove any slack in the media.

Fanfold Media Loading

Fanfold media feeds through the bottom (Figure 20) or the rear access slot (Figure 21) of the printer.

Note • A calibration must be performed when media and ribbon (if used) are first installed in the printer, or when a different type of media or ribbon is being used.

To load fanfold media, complete these steps:

1. Open the printhead.

2. Slide the media guide as far from the printer frame as possible.

3. Load media as shown. If the printer is in Cutter Mode, route the media through the cutter.

4. Slide in the media guide so it just touches, but does not restrict, the edge of the roll.

5. Close the printhead.

Figure 20 • Fanfold Media Loading— Bottom Supply

Printhead Lever

Open

Closed

Media Guide
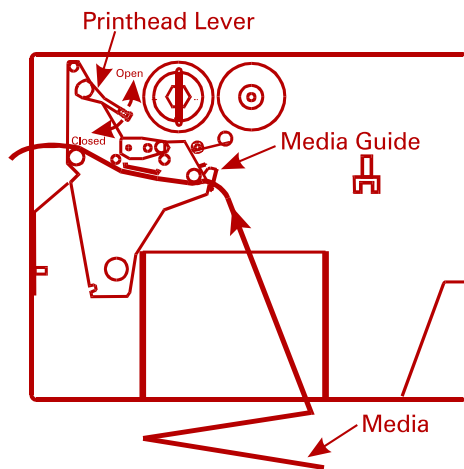
Media

Figure 21 • Fanfold Media Loading— Rear Supply

Printhead Lever

Open

Closed

Media Guide
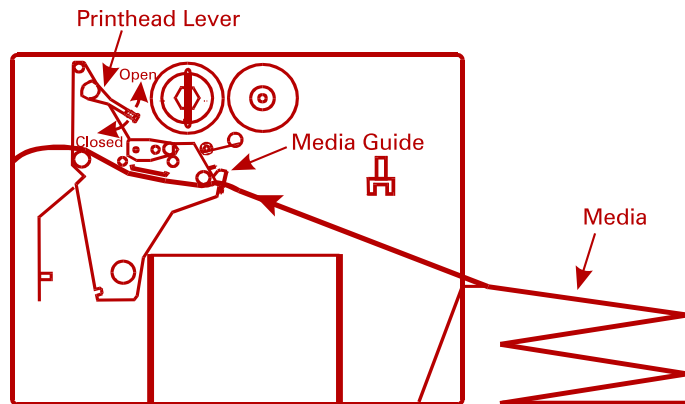
Media

Ribbon Loading

To load ribbon, follow the procedure below.

Note • Always use ribbon that is at least as wide as the media. The smooth liner of the ribbon protects the printhead from wear and premature failure due to excessive abrasion. (For direct thermal print mode, ribbon is not used and should not be loaded in the printer.)

To load ribbon, complete these steps:

1. Align the segments of the ribbon supply spindle (Figure 22).

Figure 22 • Ribbon Supply Spindle
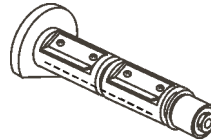
2. Place the ribbon roll on the ribbon supply spindle.

Note • Make sure that the core is pushed up against the stop on the ribbon supply spindle and that the ribbon is aligned squarely with its core. If this is not done, the ribbon may not cover the printhead entirely on the inside, exposing print elements to potentially damaging contact with the media

3. To make ribbon loading and unloading easier, make a leader for your ribbon roll if one is not present.

4. Tear off a strip of media (labels and liner) about 6–12 in. (150–305 mm) long from the roll. Peel off a label from this strip. Apply half of this label to the end of the strip and the other half to the end of the ribbon. This acts as a ribbon leader (Figure 23).

Figure 23 • Ribbon Leader
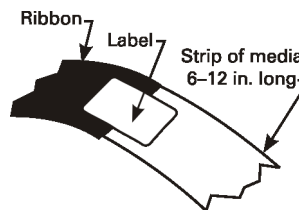
5. Open the printhead and thread the leader and attached ribbon through the print mechanism, under the upper roller, and past the platen roller (Figure 24).

Figure 24 • Ribbon Loading
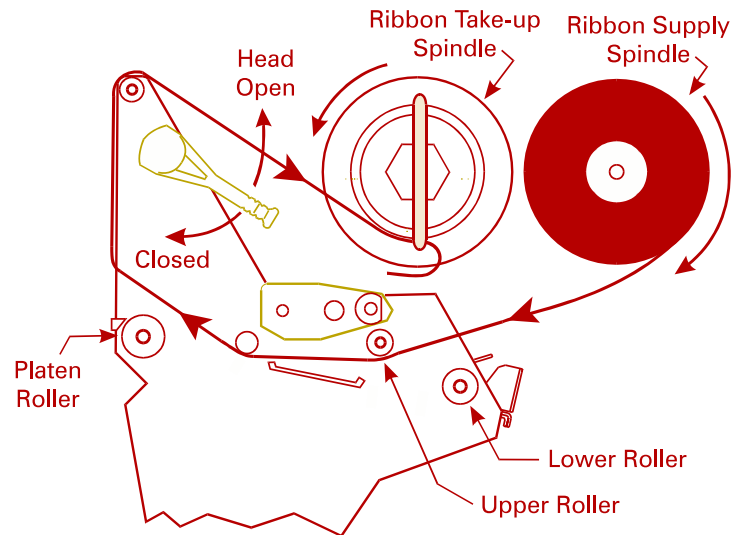
6. Before wrapping the ribbon around the ribbon take-up spindle, ensure the ribbon hook is placed correctly. The ribbon hook fits snugly in the notch (Figure 25).

Figure 25 • Ribbon Hook Placement
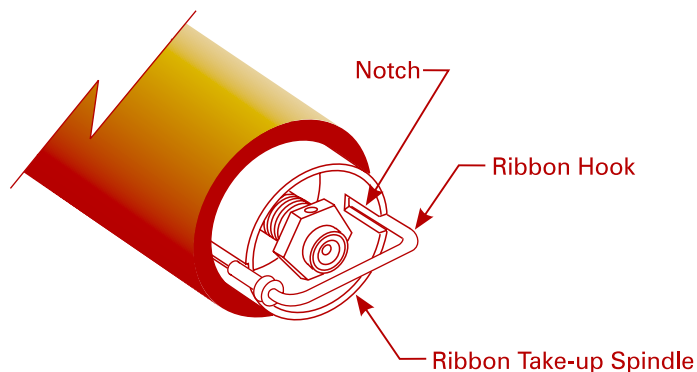
7. Place the ribbon with leader around the ribbon take-up spindle and wind counterclockwise for several turns (Figure 24).

8. Close the printhead.

Ribbon Removal

To remove used ribbon, complete these steps:

1. If the ribbon has not run out, cut or break it as close to the ribbon take-up spindle as possible.

2. Refer to Figure 26. Push the hook either forward or backward with your thumb until it slips out of the groove (1). Slide the hook to the side (2), then rotate it back and forth several times to loosen it (3).

Figure 26 • Ribbon Removal
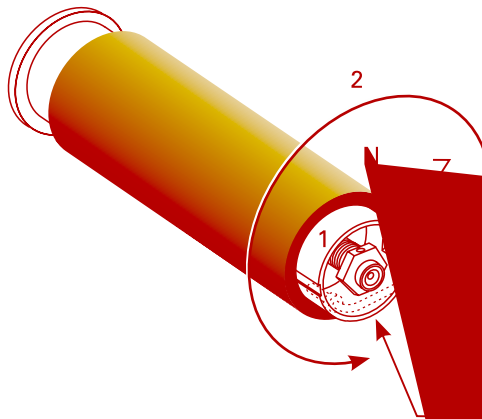
3. Remove the loosened hook from the spindle (4).

4. Lightly tap the top of the used ribbon to loosen it; grasp from the ribbon take-up spindle.

5. Remove the core from the ribbon supply spindle.

Print a Configuration Label

When you have loaded the media and ribbon (if necessary), print a printer configuration label to use as a record of your printer settings. Keep the label for baseline information on your printer when troubleshooting printing problems.

To print a configuration label, complete these steps:

1. Turn off the printer (**O**).

2. Press and hold **CANCEL** while turning on the printer.

   A configuration label prints showing the printer's currently stored parameters (similar to the one shown in Figure 27).

Figure 27 • Configuration Label

```
          PRINTER CONFIGURATION

Zebra Technologies
ZTC 105SL-200dpi
ZBR11362166

+10................. DARKNESS
+000................ TEAR OFF
TEAR OFF............ PRINT MODE
NON-CONTINUOUS...... MEDIA TYPE
WEB................. SENSOR TYPE
THERMAL-TRANS....... PRINT METHOD
104 0/8 MM.......... PRINT  WIDTH
1239................ LABEL LENGTH
39.0IN   988MM...... MAXIMUM LENGTH
BIDIRECTIONAL....... PARALLEL COMM.
RS232............... SERIAL COMM.
9600................ BAUD
8 BITS.............. DATA BITS
NONE................ PARITY
XON/XOFF............ HOST HANDSHAKE
NONE................ PROTOCOL
000................. NETWORK ID
NORMAL MODE......... COMMUNICATIONS
<~>  7EH............ CONTROL PREFIX
<^>  5EH............ FORMAT PREFIX
<,>  2CH............ DELIMITER CHAR
ZPL II.............. ZPL MODE
CALIBRATION......... MEDIA POWER UP
CALIBRATION......... HEAD CLOSE
DEFAULT............. BACKFEED
+000................ LABEL TOP
+0000............... LEFT POSITION
047................. WEB S.
079................. MEDIA S.
065................. RIBBON S.
050................. TAKE LABEL
050................. MARK S.
000................. MARK MED S.
063................. MEDIA LED
009................. RIBBON LED
000................. MARK LED
+10................. LCD ADJUST
DPSWFXM............. MODES ENABLED
.................... MODES DISABLED
832 8/MM FULL....... RESOLUTION
V60.13.0.0P15 <-... FIRMWARE
V30 SW3 56.......... HARDWARE ID
CUSTOMIZED.......... CONFIGURATION
NONE..............A: COMPACT FLASH
3584k.............R: RAM
NONE..............B: MEMORY CARD
0448k.............E: ONBOARD FLASH
NONE................ FORMAT CONVERT
005 DISPLAY......... P32 INTERFACE
.................... TWINAX/COAX ID
2004-05-28 09:55:13 TIME STAMP
 FIRMWARE IN THIS PRINTER IS COPYRIGHTED
```

Print a Network Configuration Label

If you are using a print server, you can print a network configuration label after the printer is hooked to the network. A network configuration label lists the settings for the ZebraNet wired print server and the ZebraNet Wireless Print Server (if installed).

!

Important • To operate the Wireless Print Server, your 105*SL* printer must:

- have a serial number greater than 6400356
- have the wireless PCMCIA board installed
- be running firmware version V60.13.X or higher

To print a network configuration label, complete these steps:

1. From the front panel, press **SETUP/EXIT**.

2. Scroll through the parameters until you reach LIST NETWORK.

3. Confirm printing.

   A network configuration label prints (Figure 28).

Figure 28 • Network Configuration Label

Calibrate the Printer

There are five different ways that the printer can be calibrated. You may calibrate the printer as needed.

- **Auto-calibration** occurs when the printer feeds media after the printhead is closed and when the printer is first turned on (see *MEDIA POWER UP on page 53* and *HEAD CLOSE on page 54* for options). The printer automatically sets the value it detects for the spaces between labels. This type of calibration also happens as part of both the sensor profile and media and ribbon sensor calibration procedures.

- **Long Calibration,** which you select by pressing PAUSE then CALIBRATE, calibrates the printer for media length, media type (continuous or non-continuous), and print mode (thermal or direct thermal transfer) and updates the sensor values. This calibration is the same as what is performed when **Calibration** is selected for the MEDIA POWER UP and HEAD CLOSE parameters. For more information, see *MEDIA POWER UP on page 53* or *HEAD CLOSE on page 54*.

- **Short Calibration,** which is a selection for the MEDIA POWER UP and HEAD CLOSE parameters, uses current sensor values rather than detecting the spaces between labels and resetting the sensors. This calibration sequence may use fewer labels than the long calibration sequence, but it is less reliable because the values that are stored in the sensors could be incorrect. For more information, see *MEDIA POWER UP on page 53* or *HEAD CLOSE on page 54*.

- **Sensor Profile Calibration,** which you select through the front panel, auto-calibrates the printer and prints a media sensor profile. See *SENSOR PROFILE on page 49* for instructions.

- **Media and Ribbon Sensor Sensitivity Calibration,** which you select through the front panel, resets the sensitivity of the sensors to detect correctly the media and ribbon that you are using. See *Media and Ribbon Sensor Calibration on page 36* for instructions. If you change the type of ribbon and/or media, you might need to reset the sensitivity of the media and ribbon sensors. When the sensors are at their new sensitivity, the printer performs an auto-calibration.

Adjust and Calibrate Sensors

This section describes how to adjust and calibrate sensors.

Media and Ribbon Sensor Calibration

Media and ribbon sensor calibration is one of the most common adjustments to the printer settings. This procedure is performed through the front panel.

Indications that the sensitivity may need to be reset are:

- The CHECK RIBBON light is on even though the ribbon is properly installed.
- Non-continuous labels are being treated as continuous labels.

Note • Before you begin the calibration procedure, make sure that the maximum length is set to a value 1 in. (25.4 mm) greater than the length of the labels that you are using. If the maximum length is set to a lower value, the calibration process assumes that continuous media is in the printer.

Important • This procedure must be followed exactly as presented. All of the steps must be performed even if only one of the sensors requires adjustment. You may press the left oval at any step in this procedure to cancel the procedure.

To adjust the sensitivity of media and ribbon sensors, complete these steps:

1. Press **SETUP/EXIT**.

2. Press **NEXT/SAVE** until "MEDIA AND RIBBON CALIBRATE" displays.

3. Press the (+) key to start the calibration sequence. "LOAD BACKING CANCEL CONTINUE" displays.

4. Open the printhead. Remove approximately 8 in. (200 mm) of labels from the media roll, enough so that only the liner is threaded between the media sensors when the media is loaded (Figure 29).

Figure 29 • Media and Ribbon Calibration

Remove labels
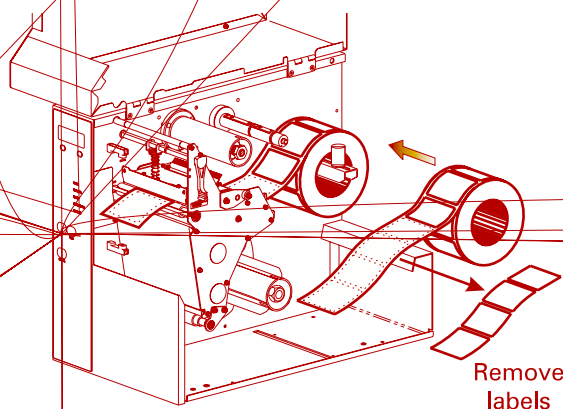
5. Press the (+) key. The LCD shows "REMOVE RIBBON CANCEL CONTINUE."

6. Slide the ribbon as far from the printer frame as possible.

7. Close the printhead, trapping the ribbon in this position.

8. Press the (+) key. The LCD shows "CALIBRATING PLEASE WAIT."

9. When this part of the calibration process is completed, the LCD reads "RELOAD ALL CONTINUE."

10. Open the printhead. Pull the liner until a label is positioned between the media sensors.

11. Return the ribbon to its proper position.

12. Close the printhead. Press the (+) key to perform the next part of the calibration sequence. "MEDIA AND RIBBON CALIBRATE" displays. The printer is calibrated when the media stops feeding.

13. Press **SETUP/EXIT** to leave Setup Mode. Choose "permanent" when SAVE CHANGES displays.

14. Press **NEXT/SAVE** to save the changes.

    The printer does a calibration equivalent to pressing CALIBRATE; during this process, the printer determines the label length. To see the new readings on the new scale, print a sensor profile.

Positioning the Media (Transmissive) Sensors

The correct positioning of the media sensors is important—it can make the difference between a perfect label and a call to Technical Support!

The web or gap sensor, also known as the "transmissive sensor," detects the gap between labels. The transmissive sensor actually consists of two sections: a light source (the lower media sensor) and a light sensor (the upper media sensor). The media passes between the two.

The upper media sensor must be positioned:

• Directly over the hole or notch, or

• Anywhere along the width of the media if there is a gap between labels.

Note • If you are using continuous media, position the upper media sensor over the media with the lower media sensor directly below it so that the printer can detect an out-of-paper condition.

To adjust the upper and lower media sensors, complete these steps:

1. Remove the ribbon (if it is installed). Refer to page 32 for instructions.

2. Locate the upper media sensor (Figure 30). The upper media sensor "eye" is directly below the adjustment screw head.

3. Slightly loosen the upper media sensor adjustment screw (use a Phillips-head screwdriver).

4. Using the tip of the screwdriver, slide the upper sensor along the slot to the desired position.

5. Tighten the upper media sensor adjustment screw.

Figure 30 • Upper Media Sensor Adjustment
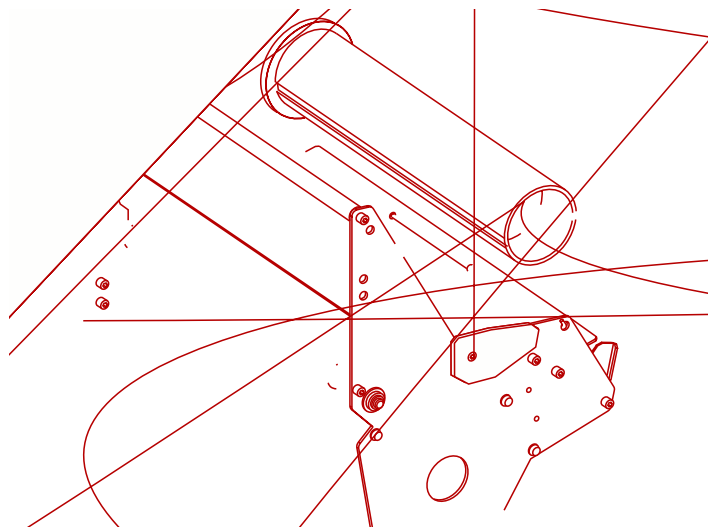
6. Position the lower media sensor (Figure 31) by sliding it in its slot until the lower media sensor (light source) is positioned directly below the upper media sensor.

Figure 31 • Lower Media Sensor Adjustment

Lower Media Sensor
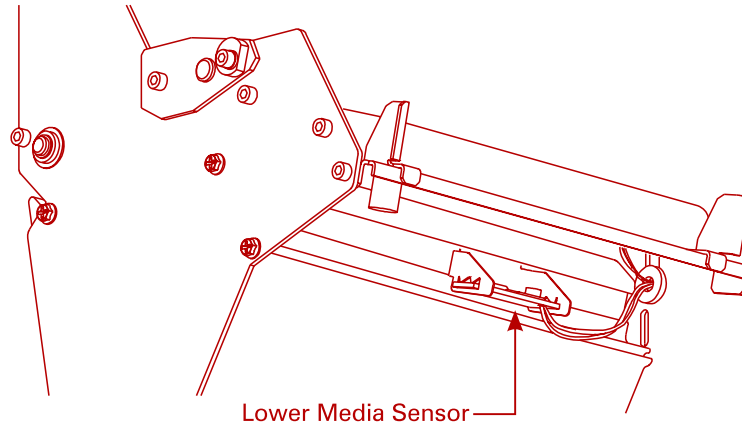
Black Mark Sensor

The optional black mark sensor is in a fixed position and enabled via the front panel (refer to *Configuration and Calibration LCD Displays* on page 46 for details).

Configuring the Software or Printer Driver

Many printer settings may also be controlled by your printer's driver or label preparation software, which may override any settings you have made manually through the front panel. Refer to the driver or software documentation for more information.

Notes • _____

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Fax: 1.847.821.1795   Attention: TechPubs — CTC

4

Configuration

After you have installed the media and ribbon and the Power-On Self Test (POST) is complete, the LCD shows PRINTER READY. (If the printer fails its POST, refer to *Power-On Self Test on page 85*.) Using the front panel display and the keys directly below it, set the printer parameters for your application.

Contents

Overview

After you have installed media and ribbon and printed a configuration label, you can change the printer's settings using the front panel controls. For an overview of the front panel, including descriptions of the buttons and lights, see *Operator Controls* on page 3. If you need to restore the printer to its factory default settings, see *FEED and PAUSE Self Test* on page 89.

Many printer settings may be controlled by your printer's driver or label preparation software. Refer to the driver or software documentation for more information.

Note • Printers that are operating on an IP network can be quickly configured in the following ways:

* with the ZebraLink® WebView (ZebraNet® PrintServer II required). For information, see the *ZebraNet Networking: PrintServer II Installation and User Guide*.
* with the SetWLAN configuration utility (ZebraNet Wireless Print Server required). For information, see the *ZebraNet Wireless Print Server User Guide*.

Enter Setup Mode

To enter Setup Mode, press **SETUP/EXIT.** Press either **NEXT/SAVE** or **PREVIOUS** to scroll to the parameter you wish to set.

Note • You may also press and hold **NEXT/SAVE** and **PREVIOUS** to advance quickly through the configuration parameters.

Parameters in this section are shown in the order displayed when pressing **NEXT/SAVE**. Throughout this process, press **NEXT/SAVE** to continue to the next parameter, or press **PREVIOUS** to return to the previous parameter in the cycle.

An asterisk (*) in the upper left-hand corner of the LCD indicates that the value displayed is different from the currently stored value.

Exit Setup Mode

To leave Setup Mode, complete these steps:

1. Press SETUP/EXIT.

   The LCD displays ᔕᗅᐯᗴ �८ᕼᗅᑎᘜᗴᔕ.

2. Press the Plus (+) or Minus (–) to display the save options (Table 4).

Table 4 • Save Options When Leaving Setup Mode

LCD Display	Description
PERMANENT	Permanently saves the changes. Values are stored in the printer even when power is turned off.
TEMPORARY	Saves the changes until you change them again or until power is turned off.
CANCEL	Cancels all changes from the time you pressed SETUP/EXIT except the darkness and tear-off settings (if they were changed).
LOAD DEFAULTS	Sets all parameters other than the network settings back to the factory defaults. **Note •** Loading factory defaults causes the printer to auto-calibrate.
LOAD LAST SAVE	Loads values from the last permanent save.
DEFAULT NET	Sets the wired and wireless network settings back to factory defaults.

3. Press NEXT/SAVE to select the displayed choice.

   When the configuration and calibration sequence is done, PRINTER READY displays.

Password-Protected Parameters

Certain parameters are password-protected by factory default, including the communication parameters.

Note • If the parameters are set incorrectly, the printer may function unpredictably.

The first attempt to change a password-protected parameter (pressing the plus (+) or minus (–) key) requires you to enter a four-digit password at the ENTER PASSWORD display. The (–) key changes the selected digit position; the (+) key increases the selected digit value. After entering the password, press NEXT/SAVE. The parameter you wish to change is displayed. If the password was entered correctly, you can now change the value.

The first time that you attempt to change a password-protected parameter, the printer displays ENTER PASSWORD. Before you can change the parameter, you must enter the four-digit password. After you have entered the password correctly, you do not have to enter it again unless you leave Setup Mode by pressing SETUP/EXIT or by turning the printer Off (**O**).

To Enter a Password for a Password-Protected Parameter, complete these steps:

1. At the password prompt, use the (–) key to change the selected digit position.

2. When you have selected the digit that you wish to change, use the (+) key to increase the selected digit value. Repeat these two steps for each digit of the password.

3. After entering the password, press NEXT/SAVE.

   The parameter you selected to change is displayed. If the password was entered correctly, you can change the value.

Default Password Value

The default password value is **1234**. The password can be changed using the **^KP** (Define Password) ZPL II instruction or through ZebraLink™ WebView (ZebraNet® PrintServer II or Wireless Print Server required).

Disable the Password Protection Feature

You can disable the password protection feature so that it no longer prompts you for a password by setting the password to **0000** via the **^KPØ** ZPL/ZPL II command. To reenable the password-protection feature, send the ZPL/ZPL II command **^KPx**, where **x** can be any number from 1 to 9999.

Basic Printer Configuration

The configuration procedure in Table 5 shows the basic parameters that might need to be altered to get your printer up and running. Refer to *Configuration and Calibration LCD Displays* on page 46 for more information on these and the other front panel parameters.

- Enter Setup Mode by pressing **SETUP/EXIT** at the "PRINTER READY" display.

Note • You need to press **NEXT/SAVE** more than once to advance to or skip some of the displays.

- To increase the value, answer "yes," indicate "on," or move to the next selection, use the (+) key.
- To decrease the value, answer "no," indicate "off," or return to the previous selection, use the (–) key.

Note • When changing parameters, an asterisk (*) in the upper left-hand corner of the LCD indicates that you have changed this setting from the one that is stored currently in memory.

Table 5 • Basic Printer Configuration Sequence

Parameter	Action/Explanation
DARKNESS	Press the (+) or (–) keys to increase or decrease the print darkness setting. (You may need to change this setting when you print your label.)
PRINT MODE	Press the (+) or (–) keys to select Tear-Off, Peel-Off, Cutter, or Rewind Mode.
MEDIA TYPE	Press the (+) or (–) keys to select continuous or non-continuous media type. (If you choose continuous media, you must also include a label length instruction in your label format.)
SENSOR TYPE	Press the (+) or (–) keys to select transmissive or black mark sensing mode. Unless your media has black marks on the back, leave your printer at the default setting (web).
PRINT METHOD	Press the (+) or (–) keys to select thermal transfer (if you are using ribbon) or direct thermal (no ribbon).
MAXIMUM LENGTH	Press the (+) or (–) keys to set the value that is closest to, but not less than, the length of the label you are using.
SAVE CHANGES	Press the (+) or (–) keys to select: PERMANENT—keeps changes saved to memory after the power is turned off. Press NEXT/SAVE to accept the selection.
PRINTER READY	You have exited Setup Mode and are ready to calibrate the printer.

Configuration and Calibration LCD Displays

Use the LCD display on the front panel to adjust printer settings. Table 6 shows parameters in the order in which they are displayed when you press NEXT/SAVE after entering setup mode. Throughout this process, press NEXT/SAVE to continue to the next parameter, or press PREVIOUS to return to the previous parameter in the cycle. Table 7 on page 57 shows the additional parameters that appear when a wired or wireless print server is installed in the printer.

Table 6 • Printer Parameters (Sheet 1 of 11)

Parameter	Action/Explanation
DARKNESS	**Adjusting Print Darkness:** Press the (+) key to increase darkness; press the (–) key to decrease darkness.
	Default: +10
	Range: 0 to +30
	Darkness settings are dependent on a variety of factors, including ribbon type, media, and the condition of the printhead. You may adjust the darkness for consistent high-quality printing.
	If printing is too light, or if there are voids in printed areas, increase the darkness. If printing is too dark, or if there is spreading or bleeding of printed areas, decrease the darkness.
	The *FEED Self Test* on page 88 can also be used to determine the best darkness setting. Since the darkness setting takes effect immediately, you can see the results on labels that are currently printing.
	Darkness settings also may be changed by the driver or software settings.
	Important • Set the darkness to the lowest setting that provides good print quality. Darkness set too high may cause ink smearing and/or it may burn through the ribbon.
TEAR OFF	**Adjusting the Tear-Off Position:** Press the (+) key to increase the value; press the (–) key to decrease the value. Each press of the key adjusts the tear-off position by four dot rows.
	Default: +0
	Range: –120 to +120
	This parameter establishes the position of the media over the tear-off bar after printing. The label and liner can be torn off or cut between labels.
PRINT MODE	**Selecting Print Mode:** Press the (+) or (–) key to display other choices.
	Default: Tear-Off
	Selections: Tear-Off, Peel-Off, Cutter, Rewind
	Print Mode settings tell the printer the method of media delivery that you wish to use. Select a Print Mode that your hardware configuration supports since some selections displayed are for optional printer features.

Table 6 • Printer Parameters (Sheet 2 of 11)

Parameter	Action/Explanation
MEDIA TYPE	**Setting Media Type:** Press the (+) or (–) key to display other choices. **Default:** Non-Continuous **Selections:** Continuous, non-continuous This parameter tells the printer the type of media you are using. Selecting continuous media requires that you include a label length instruction in your label format (^LLxxxx if you are using ZPL or ZPL II). When non-continuous media is selected, the printer feeds media to calculate label length (the distance between two detections of the inter-label gap, webbing, or alignment notch or hole).
SENSOR TYPE	**Setting the Sensor Type:** Press the (+) or (–) key to display other choices. **Default:** Web **Selections:** Web, mark This parameter tells the printer whether you are using media with a web (gap/space between labels, notch, or hole) to indicate the separations between labels or if you are using media with a black mark printed on the back. If your media does not have black marks on the back, leave your printer at the default (web).
PRINT METHOD	**Selecting Print Method:** Press the (+) key for the next value; press the (–) key for the previous value. **Default:** Thermal transfer **Selections:** Thermal transfer, direct thermal The print method parameter tells the printer the method of printing you wish to use: direct thermal (no ribbon) or thermal transfer (using thermal transfer media and ribbon). **Note •** Selecting direct thermal when using thermal transfer media and ribbon creates a warning condition, but printing continues.
PRINT WIDTH	**Setting Print Width:** Press the (+) key to increase the value, press the (–) key to toggle to a different digit. To change the unit of measurement, press the (–) key until the unit of measurement is active, then press the (+) key to toggle to a different unit of measure (inches, mm, or dots). **Default; Range:** The default and range of acceptable values vary depending on which printer you have. Refer to *Printing Specifications* on page 94 for further information about the ranges available for your model. Print width determines the printable area across the width of the label.
MAXIMUM LENGTH	**Setting Maximum Length:** Press the (–) key to decrease the value, press the (+) key to increase the value. **Default; Range:** The default and range of acceptable values vary depending on your printer's configuration. Values are adjustable in 1 in. (25.4 mm) increments. Maximum length is used in conjunction with the calibration procedure. The value of this setting determines the maximum label length used during the media portion of the calibration process. Only a few labels are needed to set media sensors. Always set the value that is closest to, but not lower than, the length of the label you are using. For example, if the length of the label is 14.5 in. (368 mm), set the parameter for 15.0 in. (381 mm).

Table 6 • Printer Parameters (Sheet 3 of 11)

Parameter	Action/Explanation
LIST FONTS	**List Fonts:** Press the (+) key to print a label listing all available fonts. This selection is used to print a label listing all fonts available in the printer, including standard printer fonts plus any optional fonts. Fonts may be stored in RAM, Flash memory, font EPROMs, or font cards.
LIST BAR CODES	**List Bar Codes:** Press the (+) key to print a label listing all available bar codes. This selection is used to print a label listing all bar codes available in the printer.
LIST IMAGES	**List Images:** Press the (+) key to print a label listing all available images. This selection is used to print a label listing all images stored in the printer's RAM, Flash memory, optional EPROM, or optional memory card.
LIST FORMATS	**List Formats:** Press the (+) key to print a label listing all available formats. This selection is used to print a label listing all formats stored in the printer's RAM, Flash memory, optional EPROM, or optional memory card.
LIST SETUP	**List Setup:** Press the (+) key to print a label listing the current printer configuration. This selection is used to print a label that lists the current printer configuration information. (Same as CANCEL Key Self Test.)
LIST NETWORK	**List Network Settings:** Press the (+) key to print a label that lists the current network configuration. (Same label as shown in *CANCEL Self Test* on page 86.) This selection is used to print a network configuration label, which lists the settings for the wired ZebraNet PrintServer II (PSII) and the ZebraNet Wireless Print Server (if installed).
LIST ALL	**List All:** Press the (+) key to print a label listing all available fonts, bar codes, images, formats, and the current printer and network configurations. This selection is used to print a label that lists the five previous selections, as described.

FORMAT CARD
A   B
	Initialize Memory Card
	Caution • Perform this operation only when it is necessary to erase all previously stored information from the optional memory card.
	
	1. Press SELECT to select the parameter.
	
	   If your printer is set to require a password, you are prompted to enter the password.
	
	2. Enter the password, then press SELECT.
	
	3. Press the PLUS (+) to select B memory (PCMCIA card) or press MINUS (−) to select the A memory (internal compact flash).
	
	   The front panel LCD asks ARE YOU SURE?.
	
	4. Press MINUS (−) to select No and cancel the request.
	
	   The INITIALIZE CARD prompt is displayed.
	   OR
	   Press PLUS (+) to select YES and begin initialization.
	
	   FORMATTING CARD displays. Depending on the amount of memory in the memory card, initialization may take up to three minutes to complete. When formatting is complete, FORMAT CARD displays.
	
	5. Press SELECT to continue with the next prompt.

Table 6 • Printer Parameters (Sheet 4 of 11)

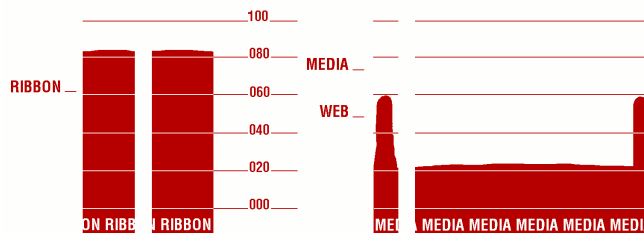| Parameter	Action/Explanation
INIT FLASH MEM	**Initialize Flash Memory** **Caution •** Perform this operation only when it is necessary to erase all previously stored information from the FLASH memory. Press PLUS (**+**) to bypass this function. 1. Press SELECT to select the parameter. If your printer is set to require a password, you are prompted to enter the password. 2. Enter the password, then press SELECT. 3. Press PLUS (**+**) to select YES. The display asks INITIALIZE FLASH?. 4. Press PLUS (**+**) to select YES. The front panel LCD asks ARE YOU SURE?. 5. Press MINUS (**−**) to select NO and cancel the request. The INITIALIZE FLASH prompt is displayed. or Press PLUS (**+**) to select YES and begin initialization. Depending on the amount of free FLASH memory, initialization may take up to one minute to complete. 6. Press SETUP/EXIT followed by SELECT. If initialization is still in process, the front panel display flashes back and forth between the phrases CHECKING E: MEMORY and PRINTER IDLE. When initialization is complete, the printer automatically exits the configuration mode and the front panel displays PRINTER READY. 7. Press SELECT to continue with the next prompt.
SENSOR PROFILE	**Sensor Profile:** Press the (+) key to initiate this standard calibration procedure and print a media sensor profile. See Figure 32. The media sensor profile may be used to troubleshoot registration problems that may be caused when the media sensor detects preprinted areas on the media or experiences difficulty in determining web location. If the sensitivity of the media and/or ribbon sensors must be adjusted, see *Calibrate Media and Ribbon Sensors on page 50* to adjust the media and ribbon sensor sensitivity.

Figure 32 • Media Sensor Profile

Table 6 • Printer Parameters (Sheet 5 of 11)

Parameter	Action/Explanation

MEDIA AND RIBBON CALIBRATE	**Calibrate Media and Ribbon Sensors**
	Use this procedure to adjust sensitivity of media and ribbon sensors.
	Note • Before you begin this procedure, make sure that the maximum length is set to a value equal to or greater than the length of the labels you are using. If the maximum length is set to a lower value, the calibration process assumes that continuous media is in the printer. See *MAXIMUM LENGTH* on page 45 for more information.
	Important • This procedure must be followed exactly as presented. All of the steps must be performed even if only one of the sensors requires adjustment. You may press the minus key at any step in this procedure to cancel the procedure.
	1. Press the plus key to start the calibration procedure.
	    The LOAD BACKING prompt displays.
	2. Open the printhead.
	3. Remove approximately 8 in. (203 mm) of labels from the backing, and pull the media into the printer so that only the backing is between the media sensors.
	4. Leave the printhead open.
	5. Press the plus key to continue.
	    The REMOVE RIBBON prompt displays.
	6. Remove the ribbon.
	7. Close the printhead.
	8. Press the plus key to continue.
	    The message CALIBRATING PLEASE WAIT displays.
	    The printer adjusts the scale (gain) of the signals that it receives from the media and ribbon sensors. On the sensor profile, this essentially corresponds to moving the peak of the graph up or down to optimize the readings for your application.
	    When calibration is complete, RELOAD ALL displays.
	9. Open the printhead and pull the media forward until a label is positioned under the media sensor.
	10. Reload the ribbon.
	11. Close the printhead.
	12. Press the plus key to continue.
	    The printer does a calibration equivalent to pressing CALIBRATE; during this process, the printer determines the label length. To see the new readings on the new scale, print a sensor profile.

PARALLEL COMM	**Setting Parallel Communications:** Press the (+) or (–) key to display other choices. **Default:** BIDIRECTIONAL **Selections:** BIDIRECTIONAL, TWINAX/COAX, UNIDIRECTIONAL Select the communications port that matches the one being used by the host computer. **Note •** Unidirectional will not support ZebraNet two-way communications.

Table 6 • Printer Parameters (Sheet 6 of 11)

Parameter	Action/Explanation
SERIAL COMM	**Setting Serial Communications:** Press the (+) or (–) key to display other choices. **Default:** RS-232 **Selections:** RS-232, RS-422/485, RS-485 multidrop Select the communications port that matches the one being used by the host computer.
BAUD	**Setting Baud:** Press the (+) or (–) key to display other choices. **Default:** 9600 **Selections:** 110, 300, 600, 1200, 2400, 4800, 9600, 14400, 19200, 28800, 38400, 57600, 115200 The baud setting of the printer must match the baud setting of the host computer for accurate communications to take place. Select the value that matches the one being used by the host computer.
DATA BITS	**Setting Data Bits:** Press the (+) or (–) key to display other choices. **Default:** 7bits **Selections:** 7bits, 8 bits The data bits of the printer must match the data bits of the host computer for accurate communications to take place. Set the data bits to match the setting being used by the host computer. **Note •** This setting must be set to 8 data bits to use Code Page 850.
PARITY	**Setting Parity:** Press the (+) or (–) key to display other choices. **Default:** Even **Selections:** Even, odd, none The parity of the printer must match the parity of the host computer for accurate communications to take place. Select the parity that matches the one being used by the host computer.
STOP BITS	**Note •** Depending on the model you have, this menu item may not be available. **Setting Stop Bits:** Press the (+) or (–) key to display other choices. **Default:** 1 stop bit **Selections:** 1 stop bit, 2 stop bits The stop bits of the printer must match the stop bits of the host computer for accurate communications to take place. Select the stop bits that match the one being used by the host computer.
HOST HANDSHAKE	**Setting Host Handshake:** Press the (+) or (–) key to display other choices. **Default:** XON/XOFF **Selections:** XON/XOFF, DTR/DSR, RTS/CTS The handshake protocol of the printer must match the handshake protocol of the host computer for communications to take place. Select the handshake protocol that matches the one being used by the host computer.

Table 6 • Printer Parameters (Sheet 7 of 11)

Parameter	Action/Explanation
PROTOCOL	**Setting Protocol:** Press the (+) or (–) key to display other choices. **Default:** None **Selections:** None, Zebra, ACK/NACK Protocol is a type of error-checking system. Depending on the selection, an indicator may be sent from the printer to the host computer signifying that data has been received. Select the protocol that is requested by the host computer. Further details on protocol can be found in the *ZPL II Programming Guide Volume I*. **Note •** Zebra is the same as ACK/NACK, except that Zebra response messages are in packets. If Zebra is selected, the printer must use either DTR/DSR or RTS/CTS host handshake protocol. Protocol error works in Serial Mode only.
NETWORK ID	**Setting Network ID:** Press the (–) key to move to the next digit position; press the (+) key to increase the value of the digit. **Default:** 000 **Range:** 000–999 Network ID is used to assign a unique number to a printer used in an RS-422/RS-485 network. This gives the host computer the means to address a specific printer. If the printer is used in a network, you must select a network ID number. This does not affect TCP/IP or IPX networks.
COMMUNICATIONS	**Setting Communications Mode:** Press the (+) or (–) key to display other choices. **Default:** Normal mode **Selections:** Normal mode, diagnostics The Communication Diagnostics Mode is a troubleshooting tool for checking the interconnection between the printer and the host computer. When "diagnostics" is selected, all data sent from the host computer to the printer is printed as straight ASCII hex characters. The printer prints all characters received, including control codes, such as CR (carriage return). A sample printout is shown in *FEED and PAUSE Self Test on page 89*. **NOTES** on diagnostic printouts: • FE indicates a framing error. • OE indicates an overrun error. • PE indicates a parity error. • NE indicates noise. For any errors, check that your communication parameters are correct. Set the print width equal to or less than the label width used for the test. See *PRINT WIDTH on page 47* for more information.

Table 6 • Printer Parameters (Sheet 8 of 11)

Parameter	Action/Explanation
CONTROL PREFIX	**Control Prefix Character:** Press the (–) key to move to the next digit position; press the (+) key to increase the value of the digit.
	Note • Do not use the same hex value for the control, format, and delimiter character. The printer must see different characters to work properly.
	Default: 7E (tilde—displayed as a black square)
	Range: 00–FF
	The printer looks for this 2-digit hex character to indicate the start of a ZPL/ZPL II control instruction.
FORMAT PREFIX	**Format Prefix Character:** Press the (–) key to move to the next digit position; press the (+) key to increase the value of the digit.
	Note • Do not use the same hex value for the control, format, and delimiter character. The printer must see different characters to work properly.
	Default: 5E (caret)
	Range: 00–FF
	The printer looks for this 2-digit hex character to indicate the start of a ZPL/ZPL II format instruction.
DELIMITER CHAR	**Delimiter Character:** Press the (–) key to move to the next digit position; press the (+) key to increase the value of the digit.
	Note • Do not use the same hex value for the control, format, and delimiter character. The printer must see different characters to work properly.
	Default: 2C (comma)
	Range: 00–FF
	The delimiter character is a 2-digit hex value used as a parameter place marker in ZPL/ZPL II format instructions. Refer to the *ZPL II Programming Guide Volume I* for more information.
ZPL MODE	**Selecting ZPL Mode:** Press the (+) or (–) key to display other choices.
	Default: ZPL II
	Selections: ZPL II, ZPL
	The printer remains in the selected mode until it is changed by this front panel instruction or by using a ZPL/ZPL II command. The printer accepts label formats written in either ZPL or ZPL II. This eliminates the need to rewrite any ZPL formats you already have. Refer to the *ZPL II Programming Guide Volume II* for more information on the differences between ZPL and ZPL II.
MEDIA POWER UP	**Media Power-Up:** Press the (+) or (–) key to display other choices.
	Default: Calibration
	Selections: Feed, calibration, length, and no motion
	This parameter establishes the action of the media when the printer is turned on.
	• Calibration: Recalibrates the media sensors.
	• Feed: Feeds the label to the first web.
	• Length: Determines the length of the label.
	• No Motion: Media does not move.

Table 6 • Printer Parameters (Sheet 9 of 11)

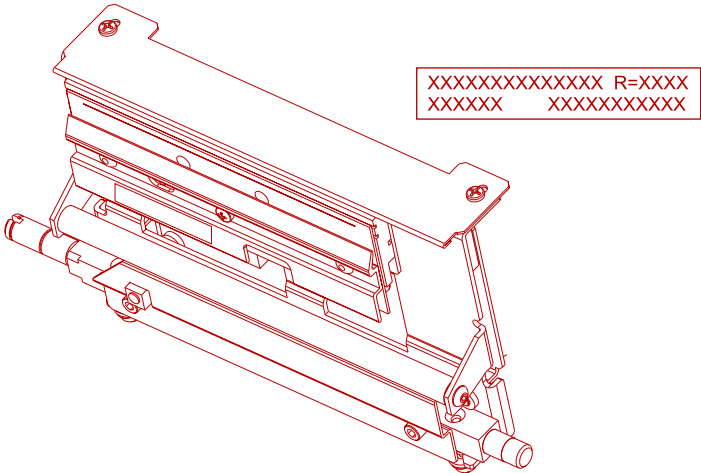| Parameter	Action/Explanation
HEAD CLOSE	**Head Close:** Press the (+) or (–) key to display other choices. **Default:** Calibration **Selections:** Feed, calibration, length, no motion Determines the action of the media after the printhead has been opened and then closed. • Calibration: Recalibrates the media sensors. • Feed: Feeds the label to the first web. • Length: Determines the length of the label. • No Motion: Media does not move.
BACKFEED	**Backfeed Sequence:** Press the (+) or (–) key to display other choices. **Default:** Default (90%) **Selections:** Default, after, before, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, off This parameter establishes when and how much label backfeed occurs after a label is removed or cut in Peel-Off, Cutter, and Applicator modes. It has no effect in Rewind or Tear-Off modes. This parameter setting can be superseded by the ~JS instruction when received as part of a label format (refer to the *ZPL II Programming Guide Volume I*). **Note** • The difference between the value entered and 100% establishes how much backfeed occurs before the next label is printed. For example, a value of 40 means that 40% of the backfeed takes place after the label is removed or cut. The remaining 60% takes place before the next label is printed. A value of "before" means that all backfeed takes place before the next label is printed.
LABEL TOP	**Adjusting Label Top Position:** Press the (+) key to increase the value; press the (–) key to decrease the value. The displayed value represents dots. **Default:** +0 **Range:** –120 to +120 dot rows The label top position adjusts the print position vertically on the label. Positive numbers adjust the label top position further down the label (away from the printhead), negative numbers adjust the position up the label (toward the printhead).
LEFT POSITION	**Adjusting Left Position** This parameter establishes how far from the left edge of a label the format begins to print by adjusting horizontal positioning on the label. Positive numbers adjust the printing to the left by the number of dots selected; negative numbers shift printing to the right. **Default:** 0000 **Range:** –9999 to +9999 1. Press SELECT to select the parameter. 2. Press MINUS (–) to move to the next position. 3. Press PLUS (+) to change between +/– or to increase the value of the digit. The displayed value represents dots. For a negative value, enter the value before changing to the minus sign. 4. Press SELECT to accept any changes and deselect the parameter.

Table 6 • Printer Parameters (Sheet 10 of 11)

Parameter	Action/Explanation
HEAD RESISTOR	**Note •** Depending on the printer model you have, this menu item may not be available. For printers with model numbers 10500-2XXX-XXXX and 10500-3XXX-XXXX, the head resistor value is set automatically. **Setting the Head Resistor Value:** This value has been preset at the factory to match the resistance value of the printhead. It does not need to be changed unless the printhead is replaced. **Caution •** This parameter should be changed only by a qualified service technician. 1. Before replacing the printhead, look for the label that shows the resistance value (ohm value) of the new printhead and note it for the setting (Figure 33). **Figure 33 • Head Resistance Value** 2. From the front panel, access the HEAD RESISTOR parameter. 3. Press the (–) key to move to the next digit position; press the (+) key to increase the value of the digit. **Caution •** Do not set the value higher than that shown on the printhead. Setting a higher value may damage the printhead. **Initial Value:** Factory-set to match the printhead shipped with your printer. **Default Value:** 0500 **Range:** 0500 to 1175
WEB S. MEDIA S. RIBBON S. MARK S. MARK MED S. RIBBON LED MARK LED	Press **NEXT/SAVE** repeatedly to skip these parameters. **Caution •** These parameters are automatically set during the calibration procedure. They should be changed only by a qualified service technician. Refer to the maintenance manual for more information on these parameters.

Table 6 • Printer Parameters (Sheet 11 of 11)

Parameter	Action/Explanation
LCD ADJUST	**LCD Display Adjustment:** Press the (–) key to decrease the value (reduce brightness); press the (+) key to increase the value (increase brightness). **Range:** 00 to 19 This parameter allows you to adjust the brightness of your LCD if it is difficult to read.
FORMAT CONVERT	**Format Convert:** Press the (+) or (–) key to display other choices. **Default:** None **Selections:** None, $150 \rightarrow 300$, $150 \rightarrow 600$, $200 \rightarrow 600$, $300 \rightarrow 600$ Selects the bitmap scaling factor. The first number is the original dots per inch (dpi) value; the second, the dpi to which you would like to scale.
LANGUAGE	**Selecting the Display Language** This parameter allows you to change the language used on the front panel display. **Default:** English **Selections:** English, Spanish, French, German, Italian, Norwegian, Portuguese, Swedish, Danish, Spanish2, Dutch, Finnish, Japan **1.** Press SELECT to select the parameter. **2.** Press PLUS (**+**) or MINUS (**–**) to display other choices. **3.** Press SELECT to accept any changes and deselect the parameter.

ZebraNet® Wired and Wireless Print Server LCD Displays

The menu options shown in Table 7 display only if you have the ZebraNet PrintServer II, 10/100 PrintServer, or Wireless Print Server installed.

[!] **Important •** The Wireless Print Server is not available for 105*SL* printers with serial numbers less than 6400357.

Table 7 • Print Server LCD Displays

LCD	Explanation
IP PROTOCOL[1]	**IP Protocol** Allows either the user (permanent) or the server (dynamic) to select the IP address. If a dynamic option is chosen, this selection determines the method(s) by which the print server (wired or wireless) receives the IP address from the server. For more information, see the *ZebraNet Networking: PrintServer II Installation and Users Guide*. • Press the (+) or (–) key to display other choices. **Default:** ALL **Selections:** ALL, GLEANING ONLY, RARP, BOOTP, DHCP, DHCP AND BOOTP, PERMANENT
IP ADDRESS[1]	**IP Address** This parameter allows you to select the IP address if PERMANENT was chosen in IP PROTOCOL. (If a dynamic option was chosen, the user cannot select the address.) 1. Press the (–) key to move to the next digit position. 2. Press the (+) key to increase the value of the digit.
SUBNET MASK[1]	**Subnet Mask** This parameter selects the part of the IP address that is considered to be part of the local network. It can be reached without going through the default gateway. 1. Press the (–) key to move to the next digit position. 2. Press the (+) key to increase the value of the digit.
DEFAULT GATEWAY[1]	**Default Gateway** This parameter allows you to select the IP address that the network traffic is routed through if the destination address is not part of the local network. 1. Press the (–) key to move to the next digit position. 2. Press the (+) key to increase the value of the digit.
MAC ADDRESS[2]	**MAC Address** This parameter cannot be changed through the front panel.

1 These parameters appear after the system recognizes the existence of a ZebraNet print server (wired or wireless). After the print server is recognized, all zeroes (000.000.000.000) will display until the printer obtains an IP address or defaults to address 192.168.254.254.

2 Appears only when the ZebraNet Wireless Print Server is installed.

3 This parameter appears 1) when no wireless card is inserted or 2) when the wireless card is associated to the WLAN and the card supports LEAP.

Table 7 • Print Server LCD Displays (Continued)

LCD	Explanation
ESSID[2]	**ESSID** This parameter cannot be changed through the front panel.
AUTH. TYPE[2]	**Authentication Type** **Default:** OPEN **Selections:** OPEN, SHARED
LEAP MODE[3]	An encryption method that is available with some wireless cards. Set the LEAP user name and password through the printer web pages. *Accepted Values:* ON, OFF *Default Value:* OFF
ENCRYPTION MODE[2]	**Encryption Mode** **Default:** OFF **Selections:** OFF, 40-BIT, 128-BIT
ENCRYPTION INDEX[2]	**Encryption Index** **Default:** 1 **Selections:** 1, 2, 3, 4
RESET NETWORK[1]	**Reset Network** This option resets the wireless card and the print server when the wireless option is running. Selecting this option has no effect when the wireless option is not running, when there is no card inserted, or when the wireless password is anything other than the default (zero). **1.** Press the (+) key to select YES. The LCD prompts ARE YOU SURE?. • Press the (–) key to select NO to cancel the request. • Press the (+) key to select YES and reset the network.

1   These parameters appear after the system recognizes the existence of a ZebraNet print server (wired or wireless). After the print server is recognized, all zeroes (000.000.000.000) will display until the printer obtains an IP address or defaults to address 192.168.254.254.

2   Appears only when the ZebraNet Wireless Print Server is installed.

3   This parameter appears 1) when no wireless card is inserted or 2) when the wireless card is associated to the WLAN and the card supports LEAP.

5

Data Ports

This chapter describes the standard communication ports on the printer.

Contents

Serial Data Port

The connection for this standard interface is made through the female DB-9 connector on the rear panel. A DB-9 to DB-25 interface module is required for all RS-232 connections through a DB-25 cable (see page 62 for details).

For all RS-232 input and output signals, the printer follows both the Electronics Industries Association's (EIA) RS-232 specifications and the Consultative Committee for International Telegraph and Telephone (CCITT) V.24 standard signal level specifications.

Table 8 shows the pin configuration and function of the rear panel serial data connector on the printer.

Table 8 • Serial Port Pin Configuration

Pin No.	Name	Description
1	—	Not connected
2	RXD	Receive data—data input to printer
3	TXD	Transmit data—data output from printer
4	DTR	Data terminal ready—output from printer
5	SG	Signal ground
6	DSR	Data set ready—input to printer
7	RTS	Request to send—output from printer
8	CTS	Clear to send—input to printer
9	+5 V DC	+5 VDC at 750 mA The maximum current draw may be limited by option configuration.

Note • An interface module is required for RS-422/RS-485 interface support (see page 63).

RS-232 Interface Connections

The printer is configured as Data Terminal Equipment (DTE).
Figure 34 illustrates the internal connections of the printer's RS-232 connector.
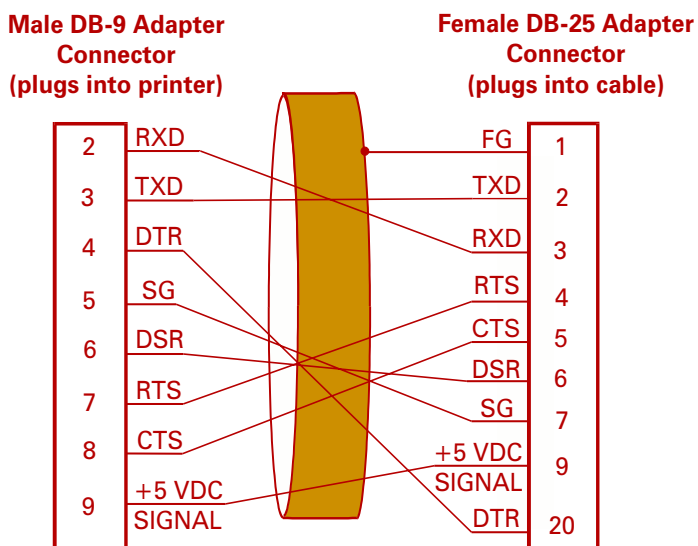
Figure 34 • RS-232 Connections

RS-232 Interconnections Using a DB-25 Cable

To connect the printer's RS-232 DB-9 interface to a DB-25 connector, an interface adapter is required (part number 3138). A generic DB-25 adapter may also be used, however, the +5 VDC signal source would not be passed through. Figure 36 illustrates the connections required for the DB-9 to DB-25 interface.

Note • The cable used to connect the printer to a computer must be a null modem (crossover) cable. If you want to connect the printer to any other DTE devices, you must also use a null modem cable.

Figure 36 • DB-9 to DB-25 Connections

NOTE: Pin 1 of DB-9 connector is unused and unterminated.

RS-422/RS-485 Interconnections

Note • A jumper on the computer's main logic board needs to be installed on JP1, Pins 2 and 3, for the RS-422/RS-485 interface adapter to function properly.

To connect the printer's RS-232 DB-9 interface to a host computer through an RS-422 or an RS-485 interface, an interface adapter is required (part number 33130). Figure 37 illustrates the required cable wiring for interconnecting to the interface adapter's DB-25 female connector.

Figure 37 • DB-25 Adapter Connections

**Female DB-25 Connector on
RS-422/RS-485 Adapter**

Parallel Data Port

A standard 36-pin parallel connector is available at the rear of the printer for connection to the data source. Under normal circumstances, data sent from the printer to the host computer in response to a "Printer Status Request" command is sent through the RS-232 serial port. However, if the host computer has a properly configured IEEE-1284 parallel port that is recognized by the printer, status information is returned through the parallel port. Port selection for status information is determined each time the printer is turned on.

Table 9 shows the pin configuration and function of a standard computer-to-printer parallel cable.

Table 9 • Parallel Port Pin Configuration

36-pin Connector	Description
1	nStrobe/HostClk
2–9	Data Bits 1–8
10	nACK/PtrClk
11	Busy/PtrBusy
12	PError/ACKDataReq
13	Select/Xflag
14	nAutoFd/HostBusy
15	Not used
16 & 17	Ground
18	+5 V @ 750 mA
19–30	Ground
31	ninit
32	nFault/NDataAvail
33 & 34	Not used
35	+5 V through a 1.8K Ω Resistor
36	NSelectin/1284 active

6

Memory Cards

This chapter describes the optional cards that can be used with the printer and gives instructions for installation.

Contents

PCMCIA Memory Card

A Type 1- or Type II-compliant PCMCIA memory card holds extra memory or font options for the printer. The card is hot-swappable (it can be installed while the printer is on).
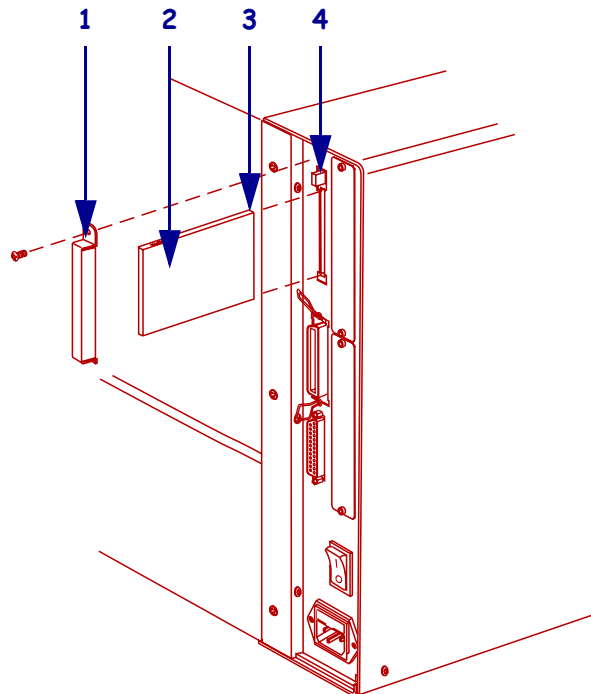
⚠ **Electrostatic Discharge Caution •** Observe proper electrostatic safety precautions when handling any static-sensitive components such as circuit boards and printheads.

To install the PCMCIA card, complete these steps:

1. Remove the PCMCIA card shield from the rear of the printer (Figure 38).

Figure 38 • PCMCIA Card Installation

1	PCMCIA card shield
2	PCMCIA card
3	Notch
4	Card-eject button

2. Insert the PCMCIA card, with the notch **up**, into the card slot as shown. Insert it far enough to make the eject button pop out.

3. Reinstall the PCMCIA card shield over the PCMCIA card and card slot.

Note • The PCMCIA card may take a few minutes to initialize. The PAUSE light flashes while the card initializes. If the card is already initialized, the PAUSE light flashes only once or twice after the card is installed.

The printer is ready to operate with the additional memory or font option. To be sure that the card has successfully initialized, print a configuration label as instructed in *Print a Configuration Label* on page 33 and review it to see whether the new memory card information is listed.

CompactFlash Card

A CompactFlash card is a nonvolatile memory card that stores data even when the power to the printer is turned off. A Type I-compliant CompactFlash card holds extra memory or optional fonts for your printer.

Caution • This procedure should only be performed by qualified service technicians.

Electrostatic Discharge Caution • Observe proper electrostatic safety precautions when handling any static-sensitive components such as circuit boards and printheads.

To install a CompactFlash card, complete these steps:

1. Turn the AC power Off (**O**).

2. Disconnect the AC power cord from the printer.

3. Remove the two screws near the bottom of the electronics cover (Figure 39).

**Figure 39 • Printer Exterior**
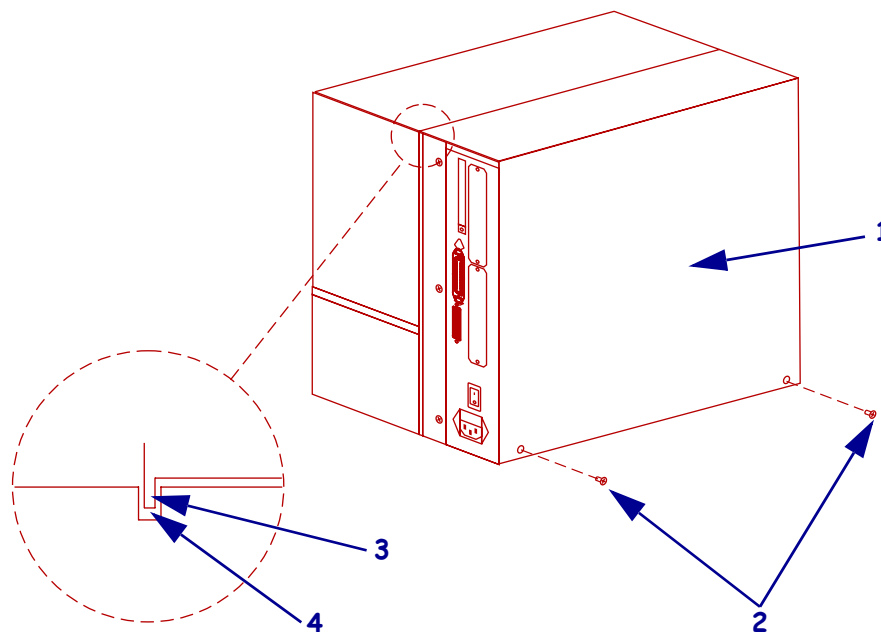
1	Electronics cover
2	Screws
3	Channel
4	Lip of cover

4. Lift the electronics cover at the rear top corner. Pull the corner forward and up, then lift the cover up and away from the printer.

5. Insert the CompactFlash card into the card slot on the upper portion of the option board. Insert the card with the back (unlabeled) side of the card facing out. The card can be inserted only one way and should snap into place.

Figure 40 shows where to insert the CompactFlash card.

Figure 40 • Compact Flash Card Insertion
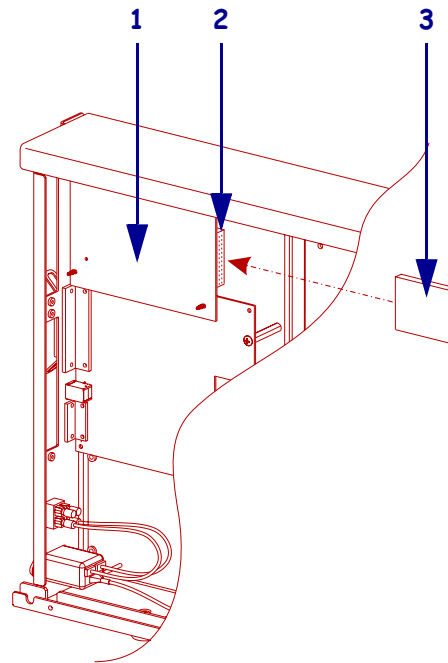
1	Option board
2	Card slot
3	Compact flash card

6. Reinstall the electronics cover by lowering the cover so the lip of the cover goes into the channel on the top of the printer.

7. Secure the cover by reinstalling the two screws near the bottom of the cover.

8. Reconnect the printer AC power cord.

9. Press and hold CANCEL while turning the printer On (**I**).

The printer prints a configuration label.

10. Check for the presence of additional memory or optional fonts by looking at the information on the configuration label.

Note • The CompactFlash card may take a few minutes to initialize. If the process is not successfully completed within 10 minutes, contact Technical Support at http://www.zebra.com/SS/service_support.htm for assistance.

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7

Routine Maintenance

Cleaning your printer regularly maintains print quality and may extend the life of the printer. This section provides routine cleaning and maintenance procedures.

Contents

Cleaning Schedule

The recommended cleaning schedule is shown in Table 10. Specific cleaning procedures are provided on the following pages.

Table 10 • Recommended Printer Cleaning Schedule

Area	Method	Interval
Printhead	Solvent*†	**Direct Thermal Print Mode:** After every roll of media (500 ft. or 50 m of media).

Thermal Transfer Print Mode: After every roll (1500 ft. or 450m) of ribbon. |
Platen roller	Solvent*	
Transmissive sensor	Air blow	
Black mark sensor	Air blow	
Media path	Solvent*	
Ribbon sensor	Air blow	
Label available sensors	Air blow	Monthly
Tear-off bar	Solvent*	As needed
Snap plate	Solvent*	
Cutter	Solvent*	

* Use Zebra's Preventative Maintenance kit, part number 47362, or a solution of 90% isopropyl alcohol and 10% deionized water.

† You may also use Zebra's *Save-a-Printhead* cleaning film. This specially coated material removes contamination buildup without damaging the printhead. Call your authorized Zebra reseller or distributor for more information.

Caution • Use only the cleaning agents indicated. Zebra Technologies is not responsible for any other fluids used on this printer.

Cleaning the Exterior

The exterior surfaces of the printer may be cleaned with a lint-free cloth. Do not use harsh or abrasive cleaning agents or solvents. If necessary, a mild detergent solution or desktop cleaner may be used sparingly.

Caution • Do not use harsh or abrasive cleaning agents or solvents.

3. Moisten an applicator tip with a solvent containing 90% isopropyl alcohol, and wipe along the print elements from end to end. (The print elements are on the brown strip just behind the chrome strip on the printhead.) Allow a few seconds for the solvent to evaporate.

4. Rotate the platen roller and clean thoroughly with solvent and an applicator.

5. Brush/vacuum any accumulated paper lint and dust away from the rollers.

6. Reload the media and the ribbon (if required).

7. Close the printhead.

Sensors

The media, ribbon, and label available sensors should be cleaned on a regular basis to ensure proper operation of the printer. Brush or vacuum any accumulated paper lint and dust off of these sensors.
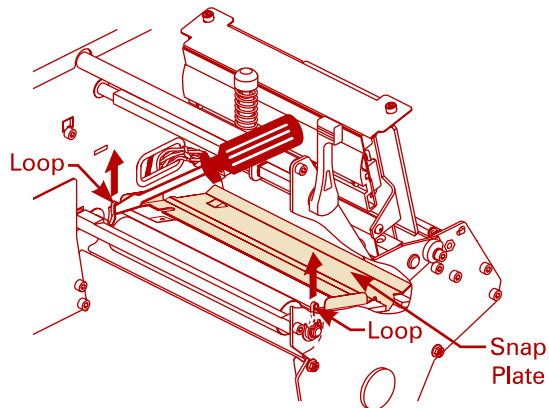
Snap Plate

Clean the snap plate to remove label adhesive or a label that has adhered to the underside of the snap plate.

1. Refer to Figure 42. Insert a small-blade screwdriver or similar tool into the loop on the left side of the snap plate. Lift the snap plate.

Caution • Do not bend, twist, or otherwise deform the loops. If the snap plate is damaged in any way, a new plate may be required for proper ribbon sensing.

Figure 42 • Snap Plate Removal and Cleaning

2. Repeat step 1 on the right side of the snap plate.

3. Remove the snap plate from the printer.

4. Clean the snap plate with cleaning solvent and a soft cloth.

5. Refer to Figure 43. To reinstall the snap plate, insert the two tabs on the bottom of the snap plate into the two slots of the media pathway.

Figure 43 • Snap Plate Reinstallation
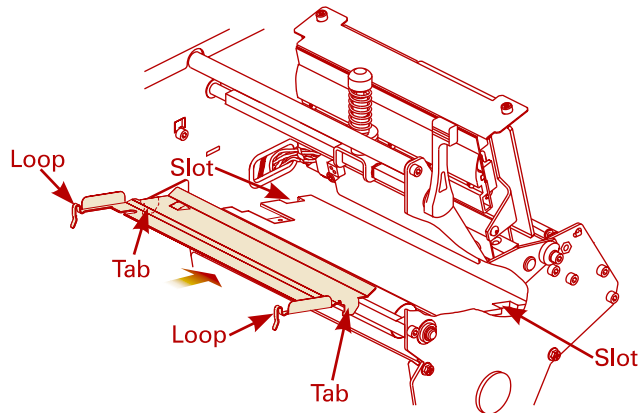
6. Slide the snap plate toward you.

7. Press down on the loops to lock the snap plate into place.

Cutter Module

(For printers equipped with the optional cutter.)

If labels are not being cut properly or if the cutter jams with labels, turn off the printer power
(**O**) and unplug the printer. Then, clean the stationary cutter blade with cleaning solvent. This
removes label adhesive and/or paper debris. If further cutter cleaning is necessary, or if the
cutter continues to perform unsatisfactorily, contact an authorized service technician.

Note • Turning off the printer results in the loss of label formats, images, and any temporarily
saved parameter settings stored in the printer's internal memory. Perform this procedure after
your printing job is complete.

Lubrication

⚠️ **Caution** • No lubricating agents other than Zebra-supplied, silicon-only lubricants should be used on the spindle felt clutches of this printer. Other commercially available lubricants damage the finish and mechanical parts.

Fuse Replacement

The printer uses a metric-style fuse (5 × 20 mm IEC) rated at F5A, 250V. The end caps of the fuse must bear the certification mark of a known international safety organization (see Figure 6 on page 12).

Depending on the model you have, the fuse may not be user-replaceable (see Figure 44) and may need to be replaced by a qualified service technician. Refer to the *Maintenance Manual* (part number 32056L) for details.
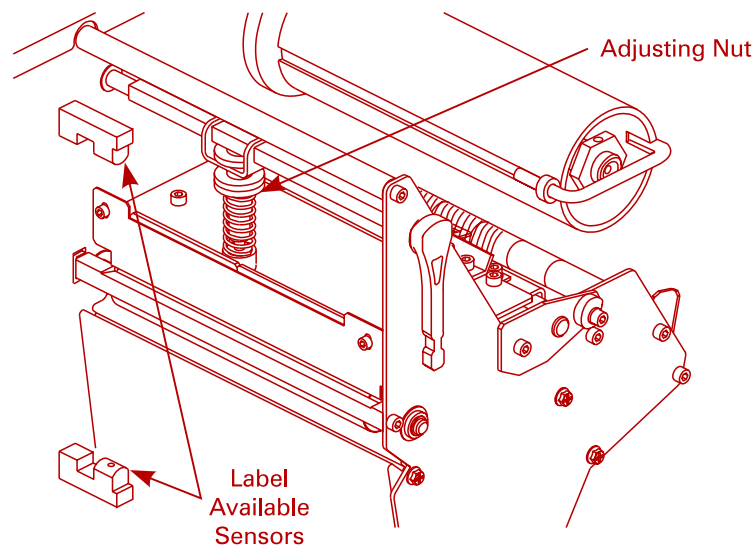
Figure 44 • Fuse Replacement
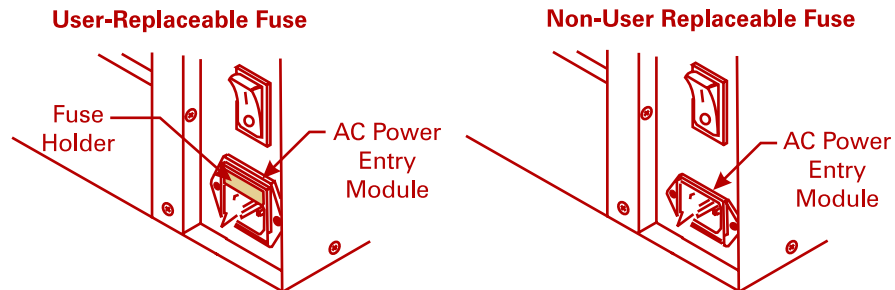
Note • Models with a user-replaceable fuse have a warning label next to the fuse for easy identification.

Adjustments

Toggle Positioning

See Figure 45. The toggle should be positioned so that it provides even pressure on the media. Position the toggle by sliding it to the desired location.

Figure 45 • Toggle Adjustment

Printhead Pressure Adjustment

This adjustment may be necessary if printing is too light on one side or if thick media is used. Refer to Figure 45.

1. Perform the toggle positioning procedure. If the problem is solved, you may stop here; otherwise, continue with the rest of this procedure.

2. Print some labels at speed A by running the PAUSE Key Self Test (see page 87).

3. While printing labels, lower the darkness setting until you see a gray level of printing.

4. Loosen the knurled (upper) locking nuts at the top of the toggle assembly/assemblies.

5. Increase or decrease spring pressure using the knurled (lower) adjusting nuts on the shafts of the toggle until the left and right edges of the printed area are equally dark.

Note • Printhead life can be maximized by using the lowest pressure that produces the desired print quality.

6. Increase darkness setting to the optimum level for the media being used.

7. Re-tighten locking nuts.

Media Sensor Position Adjustment

See *Positioning the Media (Transmissive) Sensors* on page 38.

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8

Troubleshooting

This chapter provides you with information about LCD, print quality, communications, and other errors that you might need to troubleshoot.

Contents

LED Error Messages

The LCD displays messages when there is an error. See Table 11 for LCD errors, the possible causes, and the recommended solutions.

Table 11 • LCD Error Messages

LCD	Possible Cause	Recommended Solution
Error Condition- Ribbon Out	In Thermal Transfer Mode, the ribbon is not loaded *or* loaded incorrectly.	Load the ribbon correctly. See *Ribbon Loading on page 30*.
	In Thermal Transfer Mode, the ribbon sensor is not sensing correctly loaded ribbon.	Perform the media and ribbon sensor calibration (see *Media and Ribbon Sensor Calibration on page 36*).
	In Direct Thermal Mode, when ribbon is not used:	Put the printer in Direct Thermal Mode via the front panel and remove ribbon (if loaded).
		Ensure that the printer driver or software settings are correctly set (if applicable).
Error Condition- Paper Out	The media is not loaded or loaded incorrectly.	Reload the media. Refer to *Roll Media Loading on page 22*.
	The media sensor is not adjusted properly.	Check the position of the upper and lower media sensors. See *Positioning the Media (Transmissive) Sensors on page 38*.
	The printer is set for non-continuous media, but continuous media is loaded.	Either load the correct media or set the printer for the correct media type via the front panel.
		Ensure that the printer driver or software settings are correctly set (if applicable).
		Calibrate the printer (see *Calibrate the Printer on page 35*).
	The incorrect media sensor is being used.	1. Via the front panel, check that the correct sensor is selected for the media loaded. See *SENSOR TYPE on page 45*.
		2. Calibrate the printer (see *Calibrate the Printer on page 35*).
	The maximum label length is set shorter than the label length being used.	Via the front panel, set the label length to a value that is slightly longer than the length of the label being used.
Error Condition- Head Open	The printhead is not fully closed.	Close the printhead.
Warning- Ribbon In	The ribbon is loaded.	Remove the ribbon and set the printer to Direct Thermal Mode.
		Ensure that the printer driver and/or software settings are correctly set (if applicable).

Table 11 • LCD Error Messages (Continued)

LCD	Possible Cause	Recommended Solution
Warning- Head Too Hot	The printhead is over temperature.	Allow the printer to cool. Printing automatically resumes when the printhead elements cool to an acceptable operating temperature.
Warning- Head Cold	The printhead is under temperature.	Continue printing while the printhead reaches the correct operating temperature. If the error remains, the environment may be too cold for proper printing. Relocate the printer to a warmer area.
	Printhead data cable is not properly connected.	The printhead can be very hot and can cause severe burns. Allow the printhead to cool. Disconnect and reconnect data cable to the printhead. Ensure that the cable connector is fully inserted into the printhead connector.
Warning- Cutter Jammed	Cutter blade is in the media path.	Turn off the printer power and unplug the printer. Inspect the cutter module for debris and clean as needed following the cleaning instructions on page 75.
Out of Memory	There is not enough memory to perform the function shown on the second line of the error message.	Insufficient memory for the label length, downloaded fonts/graphics, and images.
		Ensure that the device, such as Flash memory or PCMCIA card, is installed and not write-protected or full.
		Ensure that the data is not directed to a device that is not installed or available.

Print Quality Problems

Table 12 identifies problems with print quality, the possible causes, and the recommended solutions.

Table 12 • Print Quality Problems

Problem	Possible Cause	Recommended Solution
General Print Quality Issues	You are using an incorrect media and ribbon combination for your application.	Consult your authorized Zebra reseller/distributor for information and advice.
	The printer is set at the incorrect print speed.	For optimal print quality, set the print speed to the lowest possible setting via ZPL II, the driver, or the software.
	The printer is set at the incorrect darkness level.	For optimal print quality, set the darkness to the lowest possible setting via the front panel, the driver, or the software.
	The printhead is dirty.	Clean the printhead according to the instructions in *Printhead and Platen Roller* on page 73 **Caution •** The printhead is hot and can cause severe burns. Allow the printhead to cool. **Electrostatic Discharge Caution •** Observe proper electrostatic safety precautions when handling any static-sensitive components such as circuit boards and printheads.
	There is light printing (or no printing) on the left or right side of the label or the printed image is not sharp.	The toggle pressure needs to be adjusted. Follow the printhead pressure adjustment instructions on page 77.
Gray lines on blank labels with no consistent pattern	The printhead is dirty.	Clean the printhead according to the instructions in *Printhead and Platen Roller* on page 73 **Caution •** The printhead is hot and can cause severe burns. Allow the printhead to cool. **Electrostatic Discharge Caution •** Observe proper electrostatic safety precautions when handling any static-sensitive components such as circuit boards and printheads.

Table 12 • Print Quality Problems (Continued)

Problem	Possible Cause	Recommended Solution
Light, consistent vertical lines running through all of the labels	The printhead or platen roller is dirty.	Clean the printhead according to the instructions in *Printhead and Platen Roller* on page 73 **Caution •** The printhead is hot and can cause severe burns. Allow the printhead to cool. **Electrostatic Discharge Caution •** Observe proper electrostatic safety precautions when handling any static-sensitive components such as circuit boards and printheads.
Intermittent creases on the left and right edges of the labels	There is too much toggle pressure on the printhead.	Reduce the toggle pressure. See *Printhead Pressure Adjustment* on page 77.
Wrinkled Ribbon	The ribbon is not loaded correctly.	Load the ribbon correctly. See *Ribbon Loading* on page 30.
	The darkness setting is incorrect.	Set the darkness to the lowest possible setting for good print quality. See *DARKNESS* on page 46.
	Incorrect printhead pressure or balance.	Set the pressure to the minimum required for good print quality. See *Printhead Pressure Adjustment* on page 77.
	The media is not feeding correctly. It is "walking" from side to side.	Make sure that the media guide and media supply guide touch the edge of the media.

Communications

Table 13 identifies problems with communications, the possible causes, and the recommended solutions.

Table 13 • Communications Problems

Problem	Possible Cause	Recommended Solution
A label format was sent to the printer but not recognized. The DATA light does not flash.	The communication parameters are incorrect.	Check the printer driver or software communications settings (if applicable).
		Check the printer host port setting via the front panel (see page 44). Select the port that matches the one being used by the host computer.
		Ensure you are using the correct communication cable. See *Cable Requirements* on page 15.
		Via the front panel, check the protocol setting. It should be set to NONE. See *PROTOCOL* on page 52.
		Ensure that the correct driver is being used, if applicable.
A label format was sent to the printer. Several labels print, then the printer skips, misplaces, misses, or distorts the image on the label.	The host computer is set to EPP parallel communications.	Change the settings on the host computer to standard parallel communications.
	The serial communication settings are incorrect.	Ensure that the flow control settings match.
		Check the communication cable length. See *Cable Requirements* on page 15.
		Check the printer driver or software communications settings (if applicable).
A label format was sent to the printer but not recognized. The DATA light flashes but no printing occurs.	The prefix and delimiter characters set in the printer do not match the ones in the label format.	Verify the prefix and delimiter characters. See *FORMAT PREFIX* on page 53 and *DELIMITER CHAR* on page 53.
	Incorrect data is being sent to the printer.	Ensure that ZPL is being used.
		Check the communication settings on the host computer. Ensure that they match the printer settings.
The printer fails to calibrate or detect the top of the label.	The printer was not calibrated for the label being used.	Perform the calibration procedure in *Media and Ribbon Sensor Calibration* on page 36.
	The printer is configured for continuous media.	Set the media type to non-continuous media.
	The driver or software configuration is not set correctly.	As driver or software settings produce ZPL commands that can overwrite the printer configuration, check the driver or software media-related setting.

Printer Diagnostics

Self tests give information about the condition of the printer. The most commonly used are the Power-On and the CANCEL self tests.

Caution • Be sure that the print width is set to match the label width you are using before running any self tests. If the labels are not wide enough, the test may print on the platen roller and damage it.

Power-On Self Test

A full Power-On Self Test (POST) is performed automatically each time the printer is turned on (additional self tests can be performed by pressing CANCEL when you turn the printer on). During either test sequence, the front panel lights and LCD monitor the progress of the POST. If the printer fails any of these tests, the word FAILED shows on the LCD. If this occurs, notify an authorized Zebra reseller.

Additional Printer Self Tests

These self tests produce sample printouts and provide specific information that help determine the operating conditions for the printer.

Each self test is enabled by pressing a specific front panel key or combination of keys while turning the POWER on (**I**). Keep the key(s) depressed until the DATA light turns off. When the POST is complete, the selected self test starts automatically.

Note • When performing self tests, do not send a label format to the printer. For remote hosts, disconnect all data interface cables from the printer. For printers in Peel-Off Mode, remove the labels as they come out of the printer.

When cancelling a self test prior to its actual completion, always turn the printer power off and then back on to reset the printer.

If your media is not wide enough or long enough, unexpected or undesired results may occur. Make sure that your print width is set correctly for the media you are using before you run any self tests, otherwise the test may print out on the platen roller. See *PRINT WIDTH* on page 47 for information on setting the print width.

CANCEL Self Test

The CANCEL self test prints a configuration label, which tells you the current settings for the printer.

The configuration may be changed either temporarily (for specific label formats or ribbon and label stock) or permanently (by saving the new parameters in memory). Saving new parameters occurs whenever a calibration procedure is performed. Refer to *Basic Printer Configuration* on page 45 for further information about the configuration procedure. Additional Power-Up Self Tests are also performed during the POST for this test.

To perform the CANCEL Self Test, complete these steps:

1. Turn Off (**O**) the printer.

2. Press and hold CANCEL while turning the power On (**I**). Hold CANCEL until the DATA light turns off.

   A printer configuration label prints (Figure 46).

Figure 46 • Configuration Label

```
        PRINTER CONFIGURATION

Zebra Technologies
ZTC 105SL-200dpi
ZBR11362166

+10................. DARKNESS
+000................ TEAR OFF
TEAR OFF........... PRINT MODE
NON-CONTINUOUS..... MEDIA TYPE
WEB................ SENSOR TYPE
THERMAL-TRANS...... PRINT METHOD
104 0/8 MM......... PRINT  WIDTH
1239............... LABEL LENGTH
39.0IN   988MM..... MAXIMUM LENGTH
BIDIRECTIONAL...... PARALLEL COMM.
RS232.............. SERIAL COMM.
9600............... BAUD
8 BITS............. DATA BITS
NONE............... PARITY
XON/XOFF........... HOST HANDSHAKE
NONE............... PROTOCOL
000................ NETWORK ID
NORMAL MODE........ COMMUNICATIONS
<~>  7EH........... CONTROL PREFIX
<^>  5EH........... FORMAT PREFIX
<,>  2CH........... DELIMITER CHAR
ZPL II............. ZPL MODE
CALIBRATION........ MEDIA POWER UP
CALIBRATION........ HEAD CLOSE
DEFAULT............ BACKFEED
+000............... LABEL TOP
+0000.............. LEFT POSITION
047................ WEB S.
079................ MEDIA S.
065................ RIBBON S.
050................ TAKE LABEL
050................ MARK S.
000................ MARK MED S.
063................ MEDIA LED
009................ RIBBON LED
000................ MARK LED
+10................ LCD ADJUST
DPSWFXM............ MODES ENABLED
................... MODES DISABLED
832 8/MM FULL...... RESOLUTION
V60.13.0.0P15 <-... FIRMWARE
V30 SW3 56......... HARDWARE ID
CUSTOMIZED......... CONFIGURATION
NONE.............A: COMPACT FLASH
3584k............R: RAM
NONE.............B: MEMORY CARD
0448k............E: ONBOARD FLASH
NONE............... FORMAT CONVERT
005 DISPLAY........ P32 INTERFACE
................... TWINAX/COAX ID
2004-05-28 09:55:13 TIME STAMP

FIRMWARE IN THIS PRINTER IS COPYRIGHTED
```

PAUSE Self Test

This self test can be used to provide the test labels required when making adjustments to the printer's mechanical assemblies. See the sample printout below.

To perform a PAUSE self test, complete these steps:

1. Turn Off (**O**) the printer.

**2.** Press and hold PAUSE while turning the power On (**I**). Hold PAUSE until the DATA light turns off.

- The initial self test prints 15 labels at 2.4 in. (61 mm) per second (1 in. or 25.4 mm per second for the 96*Xi*III*Plus*), then automatically pauses the printer. When PAUSE is pressed, an additional 15 labels print. Figure 47 shows a sample of the labels.

Figure 47 • PAUSE Test Label

- While the printer is paused, pressing CANCEL alters the self test. When PAUSE is pressed, 15 labels print at 6 in. or 152 mm per second (4 in. or 102 mm per second for the 96*Xi*III*Plus*).
- While the printer is paused, pressing CANCEL again alters the self test a second time. When PAUSE is pressed, 50 labels print at 2.4 in. (61 mm per second). For the 96*Xi*III*Plus*, printing occurs at 1 in. (25.4 mm) per second.
- While the printer is paused, pressing CANCEL again alters the self test a third time. When PAUSE is pressed, 50 labels print at 6 in. (152 mm) per second. For the 96*Xi*III*Plus,* printing occurs at 4 in. (102 mm) per second.
- While the printer is paused, pressing CANCEL again alters the self test a fourth time. When PAUSE is pressed, 15 labels print at the printer's maximum speed.
- To exit this self test at any time, press and hold CANCEL.

FEED Self Test

This test helps you choose the best darkness setting for your printer.

To perform a FEED self test, complete these steps:

1. Turn Off (**O**) the printer.

2. Press and hold FEED while turning the power On (**I**). Hold FEED until the DATA light turns off.

   The printer prints a series of labels (Figure 48) at various darkness settings higher and lower than the darkness value shown on the configuration label.

Figure 48 • FEED Test Label

3. Inspect the labels and determine which one has the best darkness setting for your application. This value can be entered into the printer by setting the darkness during the configuration procedure.

   The value printed on that label is added to (plus) or subtracted from (minus) the darkness value specified on the configuration label. The resulting numeric value (0 to 30) is the best darkness value for that specific label/ribbon combination.

FEED and PAUSE Self Test

Performing this self test temporarily resets the printer configuration to the factory default values. These values are active only until power is turned off unless you save them permanently in memory.

To perform a FEED and PAUSE self test, complete these steps:

1. Turn Off (**O**) the printer.

2. Press and hold FEED and PAUSE while turning the power On (**I**). Hold FEED and PAUSE until the DATA light turns off.

   No labels print at the end of this test.

This test is controlled from the front panel display (see *COMMUNICATIONS* on page 52). Figure 49 shows a typical printout from this test. Turn off the power to exit this self test and return to normal operation.

Note • The communications test label prints upside-down.

Figure 49 • Communications Diagnostics Test Label
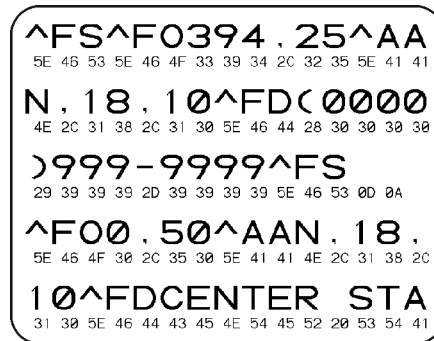
Additional Printer Diagnostics

Additional diagnostic tests are available for this printer. See the *Maintenance Manual* for information about these additional tests.

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A
Specifications

This appendix provides the features of and specifications for the 105*SL* printers.

Note • Printer specifications are subject to change without notice.

Contents

Options

• Printhead 300 dpi (12 dots/mm)	• PCMCIA Card Slot
• Cutter and catch tray*	• BAR-ONE Windows™-based WYSIWYG on-screen label design and print application software
• Rewind	
• Label peel and liner rewind	
• Internal fanfold media supply bin*	• ZebraNet PrintServer II, including Ethernet interface (10Base-T), ZebraNet WebView graphical setup and printer control, and ZebraNet Alert unsolicited error notification
• Font cards	
	• ZebraNet Wireless Card Socket, and integrated wireless 802.11b Ethernet option that supports multiple third party LAN radio cards
	• IBM twinax or coax interface

* Not compatible with rewind and peel options.

ZPL Programming Language (ZPL II)

• Downloadable graphics, scalable and bitmap fonts, and label formats	• Status message to host upon request
• Object copying between memory areas (RAM, memory card, and internal Flash)	• Programmable quantity with print, pause, and cut control
• Code Page 850 character set	• Communicates in printable ASCII characters
• Adjustable print cache	• Error-checking protocol
• Data compression	• Controlled via mainframe, mini-computer, PC, portable data terminal
• Automatic virtual input buffer management	• Serialized fields
• Format inversion	• In-spec OCR-A and OCR-B
• Mirror image printing	• UPC/EAN
• Four-position field rotation (0°, 90°, 180°, 270°)	• User-programmable password
• Slew command	

Bar Codes

- Bar code ratios (2:1 up to 3:1)
- Code 11
- Code 39 (supports ratios of 2:1 up to 3:1)
- Code 93
- Code 128 (with subsets A, B, and C and UCC case codes)
- ISBT-128
- UPC-A, UPC-E, UPC extensions
- EAN-8, EAN-13, EAN extensions
- Plessey
- Postnet
- Standard 2 of 5
- Check digit calculation where applicable

- Industrial 2 of 5 (supports ratios of 2:1 up to 3:1, Modulus 10 Check Digit)
- Interleaved 2 of 5
- LOGMARS
- MSI
- Codabar
- Codablock (2-dimensional bar code)
- PDF-417 (2-dimensional bar code)
- Code 49 (2-dimensional bar code)
- DataMatrix (2-dimensional bar code)
- Maxi Code (2-dimensional bar code)
- QR Code (2-dimensional bar code)

General Specifications

General Specifications			105*SL*	
Height			15.5 in.	394 mm
Width			11.2 in.	284 mm
Depth			18.9 in.	480 mm
Weight (without options)			55 lb	25 kg
Electrical	General (auto-adjusting)		90–264 VAC; 48–62 Hz	
	Power Consumption	Printing PAUSE test label at slowest speed	180 W	
		Printer idle	19 W	
	Compliance		Complies with FCC class "B" and Canadian Doc. class "A" rules. Carries the CE mark of compliance.	
Temperature	Operating environment	Thermal transfer	40° to 104° F	5° to 40° C
		Direct thermal	40° to 104° F	5° to 40° C
	Storage		–40° to 140° F	–40° to 60° C
Relative Humidity	Operating environment		20% to 85% non-condensing	
	Storage		5% to 85% non-condensing	

Printing Specifications

Printing Specifications			105*SL*
Resolution			203 dots/inch (8 dots/mm)/ 300 dots/inch (12 dots/mm)
Dot size (width × length)			0.0049 in. × 0.0049 in. (0.125 mm × 0.125 mm)/ 0.0033 in. × 0.0039 in. (0.084 mm × 0.10 mm)
First dot location measured from inside media edge			0.10 in. ± 0.035 in. (2.5 mm ± 0.89 mm)
Maximum print width			4.49 in. (114 mm)
Print Length (maximum)	Continuous printing	203 dpi	90 in. (2286 mm)
		300 dpi	41 in. (1041 mm)
Media registration toleration* (non-continuous media)		Vertical	= ≤ ±0.050 in. (1.3 mm)
		Horizontal	= ≤ ±0.050 in. (1.3 mm)
Programmable print speeds		203 dpi	2.4 in. (61 mm) through 8.0 in. (203 mm) per second in 1 in. (25.4 mm) increments
		300 dpi	2.4 in. (61 mm) through 8.0 in. (203 mm) per second in 1 in. (25.4 mm) increments
Bar code modulus ("X") dimension	Ladder (rotated) orientation	203 dpi	4.9 mil to 49 mil
		300 dpi	3.9 mil to 39 mil
	Picket fence (nonrotated) orientation	203 dpi	4.9 mil to 49 mil
		300 dpi	3.3 mil to 33 mil
Thin film printhead with Element Energy Equalizer (E^3)$^®$			Yes

* Media registration and minimum label length are affected by media type and width, ribbon type, and print speed. Performance improves as these factors are optimized. Zebra recommends always qualifying any application with thorough testing.

Ribbon Specifications

Ribbon Specifications		105*SL*
Ribbon must be wound with the coated side out.		
Ribbon width *(Zebra recommends using ribbon at least as wide as the media to protect the printhead from wear.)*	Minimum	0.79 in. (20 mm)
	Maximum	4.49 in. (114 mm)
Standard lengths	2:1 media to ribbon roll ratio	984 ft. (300 m)
	3:1 media to ribbon roll ratio	1476 ft. (450 m)
Ribbon core inside diameter		1.0 in. (25.4 mm)
Maximum ribbon roll outside diameter		3.2 in. (81.3 mm)

Font Specifications

Note • Bitmap fonts A through H and GS symbols are expandable up to 10 times, height and width independent.
Smooth scalable font $\varnothing$ (CG Triumvirate™ Bold Condensed) is expandable dot-by-dot, height and width independent.
IBM® Code Page 850 International Characters.

203 dpi (8 dots/mm)

Fonts	Matrix (in dots) (H × W)	Type*	Minimum Char. Size (H × W)	Maximum C.P.I.
A	9×5	U-L-D	0.044 in. × 0.029 in.	33.9
B	11×7	U	0.054 in. × 0.044 in.	22.6
C,D	18×10	U-L-D	0.088 in. × 0.059 in.	16.9
E	28×15	OCR-B	0.138 in. × 0.098 in.	10.1
F	26×13	U-L-D	0.128 in. × 0.079 in.	12.7
G	60×40	U-L-D	0.295 in. × 0.236 in.	4.2
H	21×13	OCR-A	0.103 in. × 0.093 in.	10.7
GS	24×24	SYMBOL	0.118 in. × 0.118 in.	8.4
$\varnothing$	variable	U-L-D	variable	N/A

* U = Uppercase; L = Lowercase; D = Descenders

300 dpi (12 dots/mm)

Fonts	Matrix (in dots) (H × W)	Type*	Minimum Char. Size (H × W)	Maximum C.P.I.
A	9 × 5	U-L-D	0.030 in. × 0.020 in.	50.0
B	11 × 7	U	0.037 in. × 0.030 in.	33.3
C,D	18 × 10	U-L-D	0.060 in. × 0.040 in.	25.0
E	41 × 20	OCR-B	0.137 in. × 0.087 in.	11.5
F	26 × 13	U-L-D	0.087 in. × 0.052 in.	18.8
G	60 × 40	U-L-D	0.200 in. × 0.160 in.	6.3
H	30 × 19	OCR-A	0.100 in. × 0.093 in.	10.7
GS	24 × 24	SYMBOL	0.080 in. × 0.080 in.	12.5
∅	variable	U-L-D	variable	N/A

* U = Uppercase; L = Lowercase; D = Descenders

Media Specifications

Media Specifications		105*SL*	
Minimum label length*	Tear-Off	0.7 in. (18 mm)	
	Peel-Off	0.5 in. (13 mm)	
	Cutter	1.5 in. (38 mm)	
	Rewind	0.25 in. (6 mm)	
Total media width (label + liner, if any)	Minimum	0.79 in. (20 mm)	
	Maximum	4.52 in. (115 mm)	
Total thickness (includes liner, if any)	Minimum	0.003 in. (0.076 mm)	
	Maximum	0.012 in. (0.305 mm)	
Cutter maximum full-width media thickness		0.009 in. (0.229 mm)	
Roll media core inside diameter		3 in. (76 mm)	
Maximum roll diameter		8.0 in. (203 mm)	
Inter-label gap	Minimum	0.079 in. (2 mm)	
	Preferred	0.118 in. (3 mm)	
	Maximum	Maximum inter-label gap = $2 \times$ (label length for which you have calibrated the printer) + 1 in. (25.4 mm)	
Maximum internal fanfold media pack size (label + liner) L $\times$ W $\times$ H		8.0 in. $\times$ 4.5 in. $\times$ 4.5 in. (203 mm $\times$ 114 mm $\times$ 114 mm)	
Ticket/tag sensing notch L $\times$ W		0.12 in. $\times$ 0.25 in. (3 mm $\times$ 6 mm)	
Ticket/tag sensing hole diameter		0.125 in. (3 mm)	
Additional specifications for black mark sensing	Mark length (measuring parallel to label/tag edge)	Minimum	0.12 in. (3 mm)
		Maximum	0.43 in. (11 mm)
	Mark width (measuring to perpendicular label/tag edge)	Minimum	$\geq$ 0.43 in. ($\geq$ 11 mm)
		Maximum	Full media width
	Mark location		Marks must be located within 0.040 in. (1 mm) of the inside media edge.
	Mark density		>1.0 Optical Density Unit (ODU)
	Maximum density of back of media on which black mark is printed		0.5 ODU

* Media registration and minimum label length are affected by media type and width, ribbon type, print speed, and printer mode of operation. Performance improves as these factors are optimized. Zebra recommends always qualifying any application with thorough testing.

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n mask(l,)5733
printit(s6)5(tt6)5(ng)(e, 2)5(7)TJ-0.0033 Tc06 Tw T*(pr)-7(in)-6(sep)5

4r3-2(i)5(n)-1(t)ower rinfi4uradl,
pnie4)040l05(n)l@4(t)0007 Tc -0.02 Tw 0.571 -1.886 TD (s0g8,)5733]00l6 Tc -0.002 Tw
o5(e)4itscate(l,)v 3
prhttpoy settyng4(((e) 5ng4(2(7)TJ0J0J.5602 scnTJ/4T7 1 Tf14 Tc08 T13

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